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ABSTRACT

This thesis investigates the vocabulary learning behavior of Romanian high school students in a digital context. The research identifies the vocabulary learning strategies used by EFL high school students and focuses on how the choice of vocabulary learning strategies varies across four independent variables: students' age, gender, academic profile (math-ICT, humanities, science and economic-technical) and language program (intensive English, bilingual, normal). These variables are hypothesized to influence learners' vocabulary behavior.

Furthermore, the study examines the technology enhanced tools (computer and mobile assisted language learning tools) used by these students in their vocabulary learning as well as their attitudes towards using technology in vocabulary learning. Likewise, the study analyzes how students' choice of technology enhanced tools and their attitudes towards them vary across the four independent variables.

The study is a mixed methods investigation with 1,239 participants (60% female, 40% male, aged 14–19 years old) learning English as a foreign language in nine Romanian high schools. Of the 1,239 participants who filled in the self-reported questionnaire, 43 also participated in focus group discussions prior to the administration of the questionnaire.

The quantitative data were analyzed using descriptive and inferential statistics procedures whereas the qualitative data were

analyzed thematically. The results from both phases were integrated in the results chapter.

The main findings indicated that Romanian high school students prefer social strategies, followed by determination, metacognitive, cognitive and memory strategies. However, the usage of the strategies in these categories is medium towards low. As for individual vocabulary learning strategies, the participants reported that the impact of a new word, English media, guessing from context, associating the word with a picture and using cognates are frequently used strategies. The results also indicated that students' use of vocabulary learning strategies varies across the four independent variables. As far as the use of digital tools for vocabulary learning, the findings indicated that the students in this particular cultural context use few available digital tools with a preference for online dictionaries, games and social networking web sites. The results showed that overall Romanian students are not very familiar with computer and mobile assisted language learning tools, their attitudes towards the use of digital tools for vocabulary learning are neutral and they mostly associate the use of personal devices with their personal space, suggesting that they may not want to embed learning in their everyday activities.

The results enrich existing knowledge of vocabulary learning strategies in a Romanian cultural context and they also give us an insight into how high school students use computer and mobile assisted language tools in their vocabulary learning. Implications for theory and practice are also discussed.

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Acronyms and abbreviations

ANOVA: analysis of variance; a test used in Statistics for detecting group effects on one variable

B: Bilingual (language program)

CAE: Cambridge Advanced Exam

CALL: Computer Assisted Language Learning

CAVL: Computer Assisted Vocabulary Learning

Cog.: Cognitive

CEFR: Common European Framework of References

CVE: Computer Vocabulary Exercises

Det.: Determination

EFL: English as a Foreign Language

ESL: English as a Second Language

E-T: Economic-Technical

F: a measure of the ratio of the variation explained by a model (ANOVA) to the variation explained by other factors; also female

FCE: First Certificate Exam

H: Humanities (academic profile)

I: Intensive (language program)

ICT: Information Communication Technology

IELTS:	International English Language Testing System
KET:	Key English Test
L1:	First Language
L2:	Second Language
LLS:	Language Learning Strategies
M:	mean, the centre of a score distribution; also male
MALL:	Mobile Assisted Language Learning
Mem.:	Memory
Met.:	Metacognitive
M-ICT:	Math-ICT (academic profile)
N:	Normal (language program)
PET:	Preliminary English Test
QUAL:	qualitative research
QUAN:	quantitative research
RQ:	Research Question
S:	Science (academic profile)
SD:	standard deviation, a measure of variability in a data set
Sig.:	statistical significance (the p value)
Soc.:	Social
VLS:	Vocabulary Learning Strategies

CHAPTER 1

INTRODUCTION

This chapter briefly outlines the current research situation as to vocabulary learning in a digital context as well as the situation of students in this particular context having to learn vocabulary in English, the significance and rationale of the study as well as a description of the thesis organization.

1.1. Romanian EFL students learning English vocabulary

I became interested in students' approach to vocabulary learning outside the class about two years ago when a student asked me how to learn the new words I have taught during that lesson. I was puzzled, and without thinking too much, I simply replied "they are only words, what can it be that difficult?" I thought about that reply for a long time as I knew from my personal experience with learning words that it was not always as easy as it appeared.

In the classroom, English language teachers explicitly teach the vocabulary covered in the syllabus preparing students for their Baccalaureate examination which includes a language competence examination. Success in the language examination does not depend entirely on vocabulary or grammar, all language skills being tested. Therefore, Romanian teachers do not bombard students with lists

of words to learn through memorization or repetition, but mainly explain the words in the context in which they appear. Even though students are taught vocabulary in class, followed by practice activities included in the textbook, not too much time is allocated to further consolidation or practice activities as the syllabus is imposed and needs to be covered within one academic year. Accordingly, the mastery of the words taught in class depends largely on the students themselves and on their approach to vocabulary learning. However, although strategy training is a well-known concept in language teaching, based on my experience as both a student and a teacher in this particular cultural context, I believe it is rarely used in the context of teaching English as a foreign language. Accordingly, these points made me interested in researching vocabulary learning strategies focusing on the strategies Romanian students use to learn or consolidate vocabulary within the language classroom but also outside it. Therefore my aim was to identify the strategies Romanian students use to learn English vocabulary, the strategies they use most and least as well as the way they integrate technology in learning vocabulary.

The advent of technological affordances may have impacted the way students look at vocabulary and more importantly the way language learning in general fits into the more global digital context. According to a survey conducted by Samsung on 1911 students aged 16–19 (Chilianu, 2013), 70% of Romanian high school students have a smartphone, 60% own a laptop whereas 19% have tablets. The same study uncovered that 92% of the participants use social networking on a regular basis. We know, therefore, that digital devices play a significant role in students' lives. It seems likely that

this will also have influenced their approach to learning. However, previous research has not investigated whether Romanian teenagers use their devices in language learning in general, or more specifically in foreign language vocabulary learning. Although, there is evidence related to Romanian students' ownership of digital tools, little is known about the use of these tools as strategies for vocabulary language learning.

Previous literature (Ehrman and Oxford, 1989, Oxford and Nyikos, 1989, Gu, 2002) has suggested that individual differences are important in vocabulary learning and that understanding these differences is important for pedagogical reasons enhancing implications for practice in the teaching and learning of vocabulary.

Accordingly, the study will focus on the differences in vocabulary learning strategies between females and males, between students enrolled in different academic profiles (math-ICT, humanities, economic-technical, science), between students enrolled in different language programs (intensive English, bilingual and regular) as well as between students aged 14–16 and students aged 17–19. I believe these differences may reveal interesting facts as to the strategies students use in order to learn vocabulary in English.

Thus, faced with the previously mentioned issues and with the personal need to find new ways to approach vocabulary learning at classroom level, the impetus for research that would enable me to investigate these issues was laid out.

1.2. Research on Vocabulary learning strategies in a digital context

Vocabulary learning strategies represent a subcategory of language learning strategies, which are defined by Oxford (1990, p. 8) as "specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations." Vocabulary learning strategies have been defined as the actions students do in order to find out the meaning of new words, retain them in the long-term memory, recall them whenever necessary and further use them in language production (Catalán, 2003). To date, several vocabulary learning taxonomies have been proposed (Gu and Johnson, 1996; Schmitt, 1997; Nation, 2001). Schmitt's (1997) taxonomy had several advantages comparing to the others as, according to Catalán (2003), it is based on Oxford's (1990) taxonomy of language learning strategies, it could be used in different educational contexts, it is technologically simple and it also allows comparison with other studies. Much research on vocabulary learning strategies has focused on identifying the most and least used strategies as well as their degree of helpfulness in different cultural contexts (Schmitt, 1997). Other studies (Read, 1993, Nassaji, 2003) have attempted to measure the relationship between success in vocabulary learning and strategy use or have investigated the variables which influence vocabulary learning strategies, such as gender, cultural context, age or academic profile (Ehrman and Oxford, 1989, Oxford and Nyikos, 1989, Gu, 2002, Catalán, 2003). In most of the empirical studies (Sanaoui,

1995, Stoffer, 1995, Moir 1996, Gu and Johnson, 1996, Lawson and Hogben, 1996) on vocabulary learning strategies, the participants were university or adult students. Although there have been several studies using Schmitt's (1997) taxonomy in various cultural contexts, with the purpose to identify the vocabulary learning strategies used by learners, the cultural context of the current study has been under researched.

As in the case of previous research, the current study takes into account several independent variables which are hypothesized to influence the vocabulary strategies used by students. Accordingly, the current study investigates four independent variables (gender, age, academic profile, language program) which previous research (Ehrman and Oxford, 1989, Oxford and Nyikos, 1989, Catalán, 2003, Gu, 2002, Peacock and Hu, 2003, Muñoz, 2006, Hong-Nam and Leavell, 2006) suggested may be important in determining students' vocabulary learning.

The current study envisages the emergence of various computer and mobile assisted tools for vocabulary learning and the way high school students make use of them in their vocabulary learning process. Although there has been a considerable amount of studies investigating vocabulary learning strategies in different cultural contexts, I am not aware of any which combined the identification of vocabulary learning strategies with the digital tools students might use for learning and consolidating vocabulary.

The impact of various technological affordances in the 21st century may have had an impact on the choice and use of vocabulary learning strategies. However in this cultural context, little is known about learners' motivation and engagement with using technology

in language learning, the focus being mostly on teachers' use of technology in teaching. I believe students' use of technology in language learning is as important as teachers' use. Having empirical evidence to show how students feel about using technological affordances with a learning purpose in mind is important for language teachers who may want to adapt their teaching practices also by taking into account this aspect.

1.3. Rationale for the study

The purpose of the present research is to investigate the vocabulary behavior of Romanian high school students in a digital context, with particular emphasis on four independent variables which are hypothesized to determine learners' vocabulary behavior. Since behavior is very much determined by attitudes, the study also aims to explore students' attitudes towards learning vocabulary in English using digital tools. I chose this particular cultural context because I work here which helps me connect research and practice, secondly I have previously done research in this context, which is very helpful in dealing with all the bureaucracy and ethical procedures and thirdly I was also a student in this education system which enables me to understand the topic from a student perspective as well. As several researchers (Green and Oxford, 1995, Politzer and McGroarty, 1985) suggested, I believe that research on learning strategies ought to be carried out in various cultural contexts. I also consider that the context of the study is interesting from a linguistic point of view since Romanian is part of the Romance family of languages, favoring thus language transfer between English

words with a Latin root and Romanian words to occur and so likely influencing the vocabulary strategies adopted.

The main reason why I chose this topic was to see the extent to which vocabulary learning strategies are actually used by students outside the classroom and whether the technological affordances, which enable them to quickly access information about new words, store and consolidate them easily, are actually used by students in this particular context. It is important to know these things as they may have implications for both theory and practice in the field of vocabulary learning with CALL and MALL. As far as theory is concerned, viewing students' learning with CALL and MALL through the students' perspective and also focusing on the differences in the variables investigated, might enrich the existing literature on the use of CALL and MALL in vocabulary learning. It will enrich the literature on CALL and MALL by finding out the extent to which students use digital tools in their vocabulary learning, the differences across the four independent variables in the use of digital tools as well as students' attitudes towards the way they could use technology in their vocabulary learning.

The current investigation has two main purposes:

- To gain an understanding of the vocabulary learning strategies Romanian students use;
- To find out how students make use of mobile and computer tools in their vocabulary learning;

1.4. Research questions

Based on the prospective relationship between learners' vocabulary strategy use and the selected independent variables and through a comprehensive review of the related literature, the following research questions were formed:

1. What types of vocabulary learning strategies do Romanian high school students use in a digital context?
2. What individual vocabulary learning strategies do Romanian high school students use mostly?
3. How do the types of vocabulary learning strategies vary across students' age, academic profiles, language program and gender?
4. What technology enhanced tools do the students use in their learning of vocabulary?
5. How does the students' use of digital tools for learning vocabulary vary across their age, academic profiles, language program and gender?
6. What are the students' attitudes towards the use of technology-enhanced tools in their vocabulary learning?
7. How do the students' attitudes vary across gender, age, language program, academic profiles?

RQ 1 investigates the types of vocabulary learning strategies (e.g. determination, social, metacognitive, cognitive, memory) Romanian high school students use whereas RQ 2 looks at students' usage of individual vocabulary learning strategies. RQ 3 explores how the types of VLS students use vary across the four independent

variables. These three questions enrich existing knowledge on VLS through the fact that research is conducted in a different cultural context analyzing variables which have been previously researched separately.

RQ 4 and 5 bring more originality to the study as they focus on students' vocabulary learning behavior in relation with their personal devices. These two questions enable me to further explore how vocabulary learning happens in a digital context and not only across the context of the current study. Likewise, these questions open up new areas as far as contribution to practice is concerned as I believe it is imperative that further actions related to teacher training and methodology be taken based on the answers to these two questions.

RQ 6 and 7 stem from the assumption that the availability of these technology enhanced tools does not automatically determine students to either use them or have very positive attitudes towards them. The answers to these two questions help me to further investigate the extent to which students feel motivated to learn vocabulary in English using these devices based on their attitudes.

All questions are answered using a parallel-mixed methods design with data from focus group interviews and the self-reported questionnaire.

1.5. Significance of the study

This study can be considered significant for the following reasons. First of all, being a large scale study, its results could be generalizable across the population of high school students in Romania. This investigation is one of the first ones carried out in Romania.

Although there has been extensive global research on vocabulary learning strategies, I have not come across too much relevant empirical research on the digital tools students use to learn or consolidate vocabulary taking into account the gender, age, language program and academic profile variables. In this light, I believe the study is significant as little is known about how students perceive these digital learning tools and whether they incorporate them in their language learning. Given the fast pace of technological affordances, I believe it is necessary to pause for a moment and see how learners respond to these and how they use the available tools.

The results and discussion on the vocabulary learning strategies and digital tools students use are meant to move forward the way we research vocabulary learning strategies but also to re-conceptualize the way technology enhanced tools shape a new perspective on vocabulary learning. Some critical aspects related to the extent students want technology tools embedded in every aspect of their learning are also discussed.

1.6. Outline of the study

This study has seven chapters. Chapter one presents the current situation of the research topic, the rationale and the significance of this study. Chapter two provides background information about the research context by focusing on a brief description of the Romanian education system, some particularities related to the linguistic context and also the role of English as a foreign language in students' language education.

Chapter three is a literature review. This chapter focuses on previous research and taxonomies related to language learning strategies and vocabulary learning strategies in particular. It also reviews studies focusing on the variables I have chosen for the current study. Secondly it explicates the concepts of computer and mobile assisted language learning and their implications for vocabulary learning and it describes several digital tools for vocabulary learning and consolidation. Moreover it also focuses on discussing studies which have investigated students' attitudes towards the use of technology in language learning.

Chapter four explains the methodology used in the study. It first presents the ontological and epistemological assumptions on which I based the current study. I also explicated in detail the rationale behind the choice of a mixed-methods design guided by a pragmatic approach. The chapter provides details about the sample population, the data collection instruments, procedures and analysis. It also addresses the issues of validity and reliability as well as the ethical dimension involved in the study.

The outcomes of my study are presented in chapter five which integrates the analysis of both qualitative and quantitative data in order to answer the research questions. The most significant findings from both chapters are presented in the discussion chapter. This chapter discusses the most relevant findings and highlights the significance of those findings for the topic investigated. The conclusions chapter briefly summarizes the entire study, it indicates the implications, contributions and limitations of this study.

CHAPTER 2

CONTEXT

This chapter describes the socio-cultural and linguistic context where the current study took place. It gives a brief historical account as to the evolution of educational policies related to foreign language learning in Romania as well as the resulting particularities of Romanian students.

2.1. Teaching foreign languages in Romania

2.1.1. The inter-war period

The inter-war period represented a period of major changes in Romania, at all levels: social, political and cultural (Presadă and Badea, 2010). Within this context, the Romanian education system was also subject to various transformations, one of the most significant being the Law of Education, issued in 1924, which stipulated that elementary education ought to be free and compulsory (Presadă and Badea, 2010). Two features characterized the Romanian educational system at the time: modernization and autochthonisation, competing thus with well-known educational systems across Europe while also valuing the national specificity (Presadă and Badea, 2010). The study of foreign languages was a requirement during the inter-war period and the high school curriculum included, besides classical languages such as Greek and Latin, also modern

languages, German, French, Italian and English (Presadă and Badea, 2010).

2.1.2. The dark-age (1948–1960)

The dark-age of the Romanian educational system began after World War II under the domination of the Soviet Union (Presadă and Badea, 2010). During this period, the educational system slowly became a tool for communist propaganda, bringing about important changes especially in the foreign language curriculum content, Russian being declared the major foreign language in all levels of education: primary, secondary and academic, taking over the previous status of German, French, Italian or English (Presadă and Badea, 2010). Russian became compulsory in schools in 1948 and given the shortage of Russian teachers in Romania, the specializing of Romanian teachers in the Russian language became a necessity and was successfully achieved with the help of Soviet trainers (Tismăneanu et al., 2006). In terms of the teaching itself, teachers mainly relied on the grammar-translation method and not too much attention was given to speaking and listening, while vocabulary was normally learnt by means of listing words and phrases. Within the process of indoctrination, the language textbooks were also standardized and dealt with imposed themes and topics (Tismăneanu et al., 2006). During this period, learning a language other than Russian was considered a threat to the stability of the communist regime, as it would enable contact with the Western culture.

2.1.3. The ’70 onwards

Starting with the ’70 onwards, Romania reached a stage of liberalization determined by the succession of a new leader to the communist party. However, language textbooks continued to follow the Soviet pedagogy and their main purpose was to boost the feeling of patriotism through the topics they provided (Tismăneanu et al., 2006). During this period the introduction of another foreign language became possible again. According to Fodor and Peluau (2003), 60% of Romanian pupils at the time learnt French as a foreign language, being followed by English.

2.1.4. The transition period (1989–present)

After four decades of dictatorial communism, Romania has been trying to regain balance once again under the western influences. However, the restoration of democracy after the fall of communism in December 1989 did not necessarily mean the implantation of the best educational reforms and therefore the programs for different disciplines have been constantly revised ever since. The changes that took place following the events of 1989 had an influence on the foreign language policies across Romania as the country had to meet the demands for communication in another foreign language than Russian. Therefore the shift to the main international communication language in Eastern Europe was particularly due to the upheavals of 1989. The transition period brought with it new laws and language policies favoring again the learning of foreign languages and causing major changes in the approach of foreign language teaching.

2.2. Particularities of Romanian people learning foreign languages

As a result of the above discussed historical turnovers, it follows that one of the main features of this cultural context is its openness to foreign languages, even if this openness was mostly due either to grim political changes or to a particular trend. Although during the Communist regime English was taught in schools, along with German, French or Russian, progress in any of the western foreign languages was not necessarily encouraged (Tismăneanu et al., 2006). Accordingly, the textbooks were not very helpful, and neither were the dictionaries (Precup, 2005). Precup (2005) observed that, at the time, the best way to improve one's English was rock'n'roll and cinema, therefore English entered the country through popular culture. It is worth noting that foreign TV programs, movies and cartoons were never dubbed in Romanian, therefore the population was used to hearing English or any other foreign language on TV, which meant a significant exposure to the foreign language. Likewise, The European Survey on Language Competences (2012) also found that there is a positive relationship between the learners' exposure to a foreign language through both new and traditional media and the students' language level. The same document points out that usually in smaller European countries, the exposure to a foreign language through media is generally higher since, given the costs, the TV programs are not dubbed in the local language.

2.3. English language teaching and learning in Romania

According to the Eurydice report (2012), the foreign language most taught in Romania is English followed by French, German, Italian and Spanish. The study of English as a foreign language starts in the preparatory grade (6 years old students) and continues until grade 12 and university. The number of hours per week varies, but in the majority of public schools (schools funded by the state) there will be two to three hours of English per week in the primary school. Starting grade 5, public schools can organize intensive classes, where students would normally have up to five hours of English per week. At high school level, public schools can also provide bilingual education, therefore the number of hours for English language would vary between seven and nine. Within the bilingual system, students not only study the language itself, but they have special classes on civilization, history and also geography taught in English. Therefore, there are three possible language programs students can follow within the Romanian public education system: intensive English (students study up to five hours of foreign language per week), bilingual (students study at least one subject in the target foreign language), regular (students study two hours of foreign language per week).

Romania has also adopted the Common European Framework of References for Languages (CEFR, 2001), which describes the competences required to communicate in a foreign language, the related skills and knowledge as well as the various contexts for communication. The CEFR describes the six levels of language pro-

ficiency A1, A2, B1, B2, C1 and C2 (A – basic user, B – independent user, C – proficient user) with each language skill being graded on a scale and with descriptors giving an account of the progress in each skill. Accordingly, based on the CEFR, the Romanian educational authorities have developed a new competence-based curriculum for foreign languages. The Romanian National Curriculum for foreign languages owes a great deal to the CEFR and the choice of English textbooks is entirely based on the CEFR scale. As to the levels of language attainment, in Romania, at the end of upper secondary education, the minimum level of language attainment for the first foreign language studied in school varies between B2 and C1 and between A2 and B1 for the second foreign language studied. High school studies end with a national Baccalaureate examination which takes into account various subjects of study, the competence in a foreign language being also included.

2.4. The linguistic distance: English and Romanian

The linguistic distance is a phenomenon which reflects the differences between languages in terms of meaning, spelling, grammar, phonology and it determines to what extent two languages differ from each other implying thus how difficult it is to learn L2 vocabulary (Ma, 2009). Most European languages are derived from Proto-Indo-European languages, forming the Proto-Indo-European family. Inside these families, there are sub-families, for instance, the Germanic family (English, German, Dutch, etc.), the Romance family (French, Italian, Spanish, Romanian etc.), the Celtic family (Irish, Welsh, Breton etc.) etc. (Ma, 2009). This classification helps us to approximately

measure the distance between the languages, being assumed that the more distant two languages are, the more difficult it is to learn each of the languages (Ma, 2009).

Romanian is a Romance language along with Catalan, French, Italian, Portuguese, Occitan, Rhaeto-Romanic and Spanish. The Romance languages are descendent from Latin, which was the language of the Romans. Since the Romance languages have a common root, they also display similar features, especially in vocabulary and grammar, the main differences being only phonological in nature (Edcock, 1960). Edcock (1960) discusses the main features of Romance languages and how they evolved from Latin. Latin has, for example, three grammatical genders (masculine, neuter, feminine), which are all preserved in Romanian, but not in the other Romance languages. Also Romanian has kept six different cases for nouns, while the other Romance languages have only preserved one case. In Romance languages verbs are conjugated, the conjugational system being as well taken from Latin in order to clearly establish the person, number, mood and tense. On the contrary, English is a Germanic language, whose grammar and vocabulary have been mostly inherited from Proto-Germanic (Bryson, 1990). Nevertheless, Bryson (1990) asserts that a significant part of English vocabulary also comes from Romance and Latin sources. He mentions that native English words range from 20%-33%, while the rest of vocabulary consists of borrowed words. A significant part of these borrowings come directly from Latin, while others came through other Romance languages, such as French, Spanish, Italian or Portuguese. The most relevant aspect for the current study is that about 75% of the modern English vocabulary comes from French and Latin rather than Germanic sources.

Measuring the linguistic distance only based on the origins of a language gives us a general idea on how difficult it might be to learn an L2, however little is known about how this distance may or may not affect the learning process (Ma, 2009). According to Ma (2009), the most important aspect of linguistic distance for vocabulary consists in the semantic difference between various language vocabularies, which can be attributed to cultural differences.

2.4.1. Latin, English and Romanian

This section exemplifies a few lexical similarities between Romanian and English vocabulary, based on their common shared root. Accordingly, both English and Romanian draw on Latin, which means that certain English words borrowed from Latin directly are easily understood by Romanian learners, as shown by the few examples in Table 1 below.

Table 1: Examples of words sharing a common root[1]

Latin	English	Romanian
bovinus	Bovine	bovine
datum-data	Data	date (plural form)
calculatus	to calculate	a calcula
manufactura (medieval Latin)	to manufacture	a manufactura
caninus	Canine	canin

Likewise, the word formation patterns are similar, both languages using common prefixes to form new words, the following prefixes *anti-*, *de-*, *in-*, *im-*, *ir-*, *il-*, *inter-*, *non-*, *re-*, *semi-*, *sub-*, *super-*, *trans-* being also used in Romanian.

1 http://www.etymonline.com/

Secondly, there are numerous words which both Romanian and English borrowed from other Latin languages, which represent cognates as well, being easily understood by Romanian learners of English. Table 2 shows examples of such cognates.

Table 2: Cognates

English word	Romanian word
banana (borrowed from the Spanish "banana")	banana (borrowed from the French "banane")
toucan (borrowed from the French word "toucan")	tucan (borrowed from the Italian word "tucano")
lemonade (modeled on the French word "limonade")	limonadă (borrowed from the French word "limonade")
giraffe (borrowed from the French word "girafe")	girafă (borrowed from the French word "girafe")

David and Tălmăcian (2013) discuss the process of re-Latinization of the Romanian language through recent English borrowings originating from Latin. Hence in the economic terminology, there are Latinisms, which are now part of the worldwide code for communication in fields like commerce or accounting: *curriculum vitae, de facto, de jure, agenda, bonus, premium, pro forma, pro-rata, sine die, tempore, ad valorem, bona fide, cum interest.* Although these words are quite frequent in the media, the degree to which most Romanian people understand them depends on the education level. Nowadays, Romanian borrows English words in fields such as business, management, marketing, music, fashion, showbiz, IT, shopping, electronics (Militariu, 2008). In this context Călăraşu (2003) talks about a phenomenon called 'the linguistic globalization which involves using English as a medium of business communication. Zafiu (2001,

cited in David and Tălmăcian, 2013) claims that the influence of English vocabulary on the Romanian vocabulary is very powerful outweighing any other source of lexical borrowings, or semantic and phraseological translations (David and Tălmăcian, 2013). According to Zafiu (2001, cited in David and Tălmăcian, 2013), the fields most likely to borrow words and use them as such are technology, finance, trade, entertainment, IT.

Ma (2009) asserts that when the linguistic distance between L1 and L2 is small, then an important amount of positive transfer is likely to occur in learning the L2. On the other hand when the distance is great, negative transfer is likely to occur resulting in language errors. According to Nation (1990), the linguistic distance between L1 and L2 in terms of vocabulary operates on five levels: (1) pronunciation, (2) orthography, (3) grammatical patterns, (4) collocation and (5) frequency. Nation (1990) also noted that the distance in these areas determines the degree of learning difficulty of L2 words. Therefore, as far as pronunciation is concerned, Romanian learners of English are likely to make the following mistakes:

- the distinction between /θ/ and /ð/ sounds;
- they overemphasize the [r] sound;
- they do not always make the distinction between the parts of speech that are homographs and that are differentiated only by the morphological accent;
- they do not always make the distinction in pronunciation between long and short vowels ;
- the unstressed vowels and the connected speech may cause problems too;.

As to the orthography, Romanian learners use the same script as English language, however the spelling of English words usually causes problems for Romanian learners. Both languages use the Roman alphabet, the only five additional letters that Romanian has are the following: "ă" (like the "a" in English word "local"), "ş" (pronounced as "sh"), "ţ" (pronounced "ts"), "â" and î", which are the same sounds in Romanian, but they have no English equivalents.

The grammatical patterns refer to the fact that if an L2 word appears in grammatical patterns which are similar to the patterns where the L1 equivalent occurs in the L1, learning how to use that word will be less difficult.

As to the collocation aspect, this remains probably one of the most problematic aspects and one of the impediments in achieving native-like fluency for Romanian learners. Based on my observation, Romanian learners of English generally use strategies such as paraphrasing, avoidance and synonyms when they do not use a specific collocation. As to the frequency aspect, Nation (1990) defines it as the case in which an L1 and L2 share a lot of vocabulary and there is a high chance of the L2 learner using an L2 word frequently in the L2 if it occurs in the L1, while in fact the L2 word may occur less frequently (Ma, 2009).

2.5. Description of the population taking part in the study

According to Eurydice (2012), 83% of the Romanian children from primary and secondary school learn English as a foreign language and the percentage is of 94% for Romanian students enrolled in high schools and universities. Romanian students usually

start learning English from kindergarten and they continue throughout their formal education. Learners use textbooks provided by the Ministry of Education or in some cases, when the teacher decides to use a different textbook than the one suggested by the Ministry, she/he may ask students to purchase a particular kind of textbook. All students have to pass a language competence examination at the end of high school studies and also before defending their BA dissertation. Cambridge English examinations (KET, PET, FCE, CAE, IELTS) are also very popular with Romanian students. As far as Romanian students' digital literacies, based on my observation, Romanian students integrate technology into every aspect of their life. According to a survey conducted by the Romanian National Institute of Statistics (2013), in 2013, 55.8% homes in Romania are reported to have a computer with Internet access. In the urban area 69.8% of homes were reported to have a computer, whereas in the rural area, the percentage is of 37.5%. Also, the computer is used by 86.9% of people aged between 16 and 24 years old, followed by 78.9% of people aged between 25 and 34. As to the Internet access, 52.9 % of homes have internet access, 73.2% being concentrated in the urban area. In the region in which the current study is situated (north-west Romania), Internet access is wide spread in 56.9% of homes, occupying the third place according to the survey.

Chilianu (2013) uncovers the results of a study conducted by Samsung which shows that 70% of Romanian high school students own a smartphone, 19% a tablet, while 60% have a laptop. The study used a sample of 1911 students aged between 16 and 19 years old from 20 high schools in Romania. Also the same study revealed that 92% of high school students taking part in the study spend

their time on social networks, suggesting that Romanian teenagers have a strong engagement with social media.

As far as the use of technology in schools, the ICT in schools survey (2013), conducted by the European Commission revealed that students in Poland, Romania, Italy, Greece, Hungary and Slovakia are likely to lack the highly-digital equipment in schools. At the moment the Ministry of Education is working on a valuable EU project 2014–2020 which aims at equipping classrooms with the latest technology and at training teachers to use these resources (Radu, 2013). Even though smart classrooms in Romania are already on the list of future priorities, at the moment, teachers' use of technology in the classroom varies from school to school across Romania and it is highly dependent on the school's own management.

In conclusion, this particular socio-cultural context is mostly characterized by the following features:

- The most favored foreign language to be studied is English, its study starts at a very early age in formal education and it continues throughout the formal education years;
- Within their formal education years, Romanian students have the possibility to follow an intensive, bilingual or regular language program;
- English plays an important part in students' life and it is encouraged outside school as well, the students being exposed to it through various media;
- The linguistic distance between English and Romanian is shortened by the common shared Latin vocabulary as well as by the numerous borrowings from English, which favors language transfer to occur.

CHAPTER 3

LITERATURE REVIEW

The aim of the current chapter is to present some theoretical premises underpinning language learning strategies (LLS) with a particular focus on vocabulary learning strategies (VLS). This chapter also discusses vocabulary learning in the context of computer and mobile assisted language learning. Finally, it also addresses aspects related to students' motivation and attitudes when it comes to using mobile and computer assisted tools in their language learning.

3.1. Defining language learning strategies

Research into language learning strategies has increased since the 1970s mostly as their importance has been highlighted in language learning. Schmitt (1997) stated that research into language strategies was a result of the movement away from a teaching-oriented perspective to a perspective which looked at how learners' behavior could affect language acquisition. The term LLS has been defined by scholars from various perspectives, therefore the following definitions do not attempt to be exhaustive.

Weinstein and Mayer (1986) consider learning strategies as some thoughts and behaviors that the learners actually engage in while learning. Chamot (1987, p.71) also defines LLS as "techniques, approaches or deliberate actions that students would take in order to

facilitate learning". Ellis (1994, p. 529), considered that "the concept of 'strategy' is a somewhat fuzzy one and not easy to tie down", the strategy being "a mental or behavioral activity related to some specific stage in the overall process of language acquisition or language use". He further points out that "a learning strategy is a device or procedure used by learners to develop their own inter-languages" (Ellis, 1994, p. 712).

Rubin (1987, p.19) defines LLS as "a set of operations, steps, plans and routines of what learners do to facilitate the obtaining, storage, retrieval and use of information, and to regulate learning". Oxford (1990, p.8) defines as well learning strategies as "specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations". She also considers LLS very important for language learning as they are "tools for active, self-directed involvement, which is essential for developing communicative competence" (Oxford, 1990, p.1). These definitions have in common the idea that LLS reflect the goal oriented mental behavior of learners when engaged in a learning activity. They also claim that this purposeful mental behavior contributes to the process of language acquisition in various ways, depending on the individual, as the authors do not specify that this behavior is shared to the same extent by all learners. They also imply that LLS are steps taken by learners which enhance language learning. Likewise, LLS could be either visible such as actions or imperceptible such as mental processes.

3.2. Taxonomies of LLS

In order to identify the strategies good learners use, researchers (Rubin, 1987, O'Malley and Chamot, 1990, Oxford, 1990) have tried to categorize strategies into a framework based either on their direct observation of strategy use or on learners' own reports.

One of the earliest taxonomies of LLS belongs to Rubin (1987) and it consists of two main categories: a) strategies which contribute in a direct way to learning (metacognitive and cognitive strategies) b) strategies which contribute in an indirect way to learning (the communicative and social strategies).

The cognitive learning strategies refer to the operations used in learning, requiring analysis or synthesis of learning materials. Rubin (1987) identified six such cognitive learning strategies: clarification/ verification, guessing/inductive inferring, practice, memorization, deductive reasoning and monitoring. Metacognitive strategies are those strategies used to self-direct language learning, involving the planning and self-management of the learning situation. Rubin (1987) considers that the communication strategies contribute less to learning. They involve the use of synonyms, gestures, mime, cognates, circumlocution to get meaning across while participating in a conversation. As to social strategies, these have an indirect contribution to learning as they represent activities in which learners engage in order to practise their knowledge. These activities include listening to L2 media, initiating conversations or addressing questions to teachers or students. Rubin and Wenden (1987) asserted that social strategies contribute indirectly to learning because they do

not generate directly the storing, retrieving, obtaining and the using of language.

Rubin's (1987) taxonomy is important because it represents one of the first attempts to categorize language learning strategies. However, it is not very clear why communication and social strategies are considered indirect strategies and the reasons why they are thought to contribute less to learning. Rubin (1987) emphasized too much the importance of direct strategies (cognitive and metacognitive) minimizing the role of social and communicative strategies. Also the distinction between social and communicative is not very informative as they both seem to refer to the same aspect, learning while conversing with other or negotiating meanings with other speakers.

Very similar to Rubin's (1987) taxonomy is O'Malley and Chamot's taxonomy (1990), which consists of three main categories of strategies: metacognitive, cognitive and social/affective strategies. This taxonomy does not take into account Rubin's communicative strategy category and instead, it conceptualizes a new category, the social/affective one. While the cognitive and metacognitive categories share common features with the ones identified by Rubin (1987), the social/affective category focuses on cooperative learning, control of emotional constraints and asking for information. While, I would argue that social and affective strategies refer to slightly different concepts and should therefore have been separated, the identification of affective strategies is an important step forward and was taken up in Oxford's (1990) influential taxonomy.

Oxford (1990) based her classification on Rubin's (1987) former classification system of direct and indirect strategies. Accordingly,

she grouped her list of learning strategies into two main categories which consist of direct strategies (memory, cognitive, compensation) and indirect strategies (metacognitive, affective and social strategies). Compared to Rubin's (1987) taxonomy, the metacognitive strategies are considered indirect by Oxford (1990) as they only support language learning, as well as the affective and social strategies. Also, unlike Chamot and O'Malley (1990), Oxford (1990) asserts that the social and affective strategies are distinct strategies. Accordingly, she defines the affective strategies as strategies related to the learners' emotional requirements (e.g. confidence), whereas the social strategies determine interaction in the target language. Furthermore, Rubin's (1987) communication strategies were called 'compensation strategies' in Oxford's taxonomy, but they still refer to the ways learners try to overcome lack of language knowledge in order to be able to understand and continue the communication. Likewise, Oxford (1990) considers compensation strategies as direct strategies, rather than indirect, as they are likely to help the learners to become more fluent and also to acquire more information as to what is acceptable or not in the L2.

Oxford's (1990) taxonomy synthesized LLS in great detail as she further divided the main categories into nineteen secondary strategies with a further sixty-two very specific strategies which lay down the foundation of the Strategy Inventory for Language Learning (SILL).

Compared with earlier research on LLS, Oxford's (1990) taxonomy is much more detailed and extensive, which enabled her to use the SILL instrument to test EFL/ESL learners' strategy use. As to categorizing vocabulary learning strategies, Oxford's (1990) taxonomy

does not refer to specific strategies learners could use in order to discover the meaning of a new word (Schmitt, 1997). This implies, as Oxford (1990) suggested, that different taxonomies are needed for different purposes, leading to the increase of interest in specific learning strategies for different aspects of language learning, vocabulary learning receiving a special attention.

The review on LLS taxonomies gave us an insight into how the conceptualization of LLS evolved over time, each taxonomy adding something new to what was previously known to better define learners' behavior when acquiring a foreign language. LLS taxonomies represented a first step into defining and categorizing vocabulary learning strategies, which are reviewed in the following sections.

3.3. Defining Vocabulary Learning Strategies (VLS)

Vocabulary learning strategies have been documented ever since an interest in language learning strategies has appeared. Therefore, vocabulary learning strategies are derived from the general language learning strategies and they refer to the actions taken to learn vocabulary. Several definitions regarding vocabulary learning strategies have been put forward so far. For instance, Schmitt (1997) draws on Rubin's (1987) perceptions about learning and defines VLS as activities that affect the mental process of learning. For Cameron (2001), VLS represent activities that learners take in order to understand and recall vocabulary. Also, Catalán (2003) attempted to give a more broad definition of VLS. Her definition of VLS refers to strategies as actions taken to find the meaning of unknown words, to store those meanings in the long-term memory, to produce them

when needed, either in speech or in a written form. Catalán's (2003) definition shows that VLS echo an entire process of learning. Also in this context, Nation (2001), instead of defining VLS, lists the characteristics of a strategy, which draw on language learning theories. Consequently, a strategy should involve choice (e.g. one needs to be able to choose from many other strategies), then it should be complex (examples of complex strategies include the word-part analysis, the key-word technique and the guessing from context), it should provide knowledge and benefit from being trained to use it and finally it should enhance learning of vocabulary. In conclusion, VLS are seen by the majority of researchers as conscious actions taken by learners to learn vocabulary. However, not all actions enhance learning, therefore the learner should make a choice between the most efficient strategies.

3.4. Review of foundational taxonomies on vocabulary learning strategies

Amid the several studies describing the strategies learners use and the relationship between strategy use and learner success in learning, there have been several efforts to conceptualize taxonomies of vocabulary learning strategies (Bastanfar, 2010). Influential studies which have gradually paved the way for the development of an inventory of vocabulary learning strategies include: Ahmed (1989), Cohen (1990), Rubin and Thompson (1994), Sanaoui (1995), Stoffer (1995), Moir (1996), Gu and Johnson (1996), Lawson and Hogben (1996), Schmitt (1997), Porte (1988), Kudo (1999), Kojic-Sabo and Lightbown (1999), Catalán (2003), Fan (2003), Intaraprasert (2004).

As a result, these studies allowed for a better conceptualization and identification of vocabulary learning strategies.

One of the first studies was conducted by Sanaoui (1995) who investigated the vocabulary behavior of foreign students, aiming to find out how adult second language learners approach vocabulary learning and the mnemonic procedures they use in order to better retain vocabulary. Sanaoui (1995) conducted an exploratory study involving 50 beginner and advanced level ESL students, 4 case studies of ESL learners and also 8 case studies of learners of French as a second language. The participants had to record in diaries the way they learnt new words and also to discuss with other participants their methods of learning new words. Data from the participants' written reports and interviews enabled Sanaoui (1995) to conclude that there are two main learning approaches, the structured and the unstructured approach. A structured approach involves learners engaging in independent study, learners recording words recently learnt, students' reviewing of words recorded and learners practising vocabulary learnt outside the classroom. Students who did not record any of these techniques were described as following an unstructured approach, relying only on course study, giving little importance to independent study or to the practice of new words outside the classroom. Sanaoui (1995) concluded that learners who use a structured approach are likely to be more successful in learning vocabulary than learners following an unstructured approach. Also this study showed that metacognitive strategies play indeed an important role for adult learners who are mature enough to plan and structure their learning. Even though the simple grouping of structured and unstructured ignores the multiple individual differences between

learners (Kojic-Sabo and Lightbown, 1999), this study is significant since it highlights the importance of directing one's own learning both inside and outside the classroom.

Worth noting for its attempt to categorize vocabulary learning strategies, is Stoffer's (1995) study (cited in Kudo,1999). The large-scale questionnaire study involved over 700 students of various age groups who were enrolled in Spanish, German, Japanese, Russian and French studies in the USA. The aim of the research was to identify foreign language students' use of vocabulary learning strategies in relation to several variables such as age, gender and previous instruction in VLS. Stoffer (1995) designed a questionnaire comprising 53 individual strategies grouped into nine categories: memory strategies, strategies involving creative activities, strategies used for self-motivation, strategies used to create mental linkages, visual/ auditory strategies, strategies used to overcome anxiety, strategies used to organize words, strategies involving authentic language use, strategies involving physical action. The findings revealed that the most used strategies were the ones meant to create mental linkages, especially the one relating an L2 word with an L1 word. This finding is relevant for the current study as it put forward the idea that students' use of strategies is also dependent on the foreign language being learnt, therefore students learning more difficult languages, such as Russian or Japanese made use of more strategies than learners studying French, German or Spanish.

Kudo (1999) observes that even though Stoffer's (1995) study does not provide ample statistical data justifying the categorization of VLS, it represents one of the first attempts to envisage a possible taxonomy of VLS rather than the previous structured/unstructured

approach. Stoffer's (1995) study opened thus new perspectives as far as the use of a vocabulary learning questionnaire is concerned, as future studies also relied heavily on the use of the questionnaire as an instrument for collecting information about the vocabulary learning behavior of learners.

Gu and Johnson (1996) devised a vocabulary learning questionnaire aiming to investigate the VLS used by 805 EFL university students in China. The questionnaire was divided in three sections (beliefs about vocabulary learning, metacognitive strategies and cognitive strategies) and it grouped eight types of strategies: selective attention, self-initiating, guessing strategies, dictionary use strategies, strategies of memorization by repetition, strategies of memorization by coding, strategies of recording vocabulary and activation strategies. The results of the study showed that among the cognitive strategies, the most used were dictionary use, note taking, guessing from context, studying word parts, contextual coding and intentional activation of words. As to the metacognitive strategies, self-initiating and selective attention were the most used. Chinese students did not report the use of memorization techniques as well as other mnemonic devices, which is somehow dubious given that Yang and Dai (2011) observed in their article that rote memorization of vocabulary is still the main approach in vocabulary learning in the Chinese context, due to cultural, educational background and traditional teaching practices.

Likewise, Gu and Johnson (1996) attempted to investigate learners' perceptions about learning new words. They found out that learners believe that vocabulary learning does not take care of itself and it needs conscious attention and involvement on the part of the learner.

The results of the study also divided learners into five categories: readers (0,6% of the whole population taking part in the study) who believe that vocabulary is acquired through conscious study and reading, active strategy users (9,9%), who also believe that vocabulary is acquired through study but they also use a wide range of strategies, non-encoders (55,3%), who do not use too many learning strategies, encoders (32,3%), who are similar to the non-encoders, but they use encoding strategies (association, auditory, imagery, visual, word-structure and contextual encoding as strategies) and passive strategy users (19%) who are unmotivated learners, who do not know how to learn and who also do not see too much value in language learning (Ma, 2009). Gu and Johnson's (1996) study is relevant as it offers a very detailed list of VLS, containing 108 items all together. However, this feature means, as Nation (2001) observed, that it might have caused a 'fatigue factor', which is likely to have affected the results. Ma (2009) points out as well that the large number of the two middle type students (non-encoders and encoders), adding up to 87.7% of the whole sample, might be a result of the 'fatigue factor'. The findings suggest thus that learners might have various perceptions regarding vocabulary learning and moreover that, despite the large number of strategies available, they actually use few of them.

Compared to the findings in Gu and Johnson's (1996) study, Stoffer's study (1995) showed that the most used group of strategies were the ones meant to create mental linkages, whereas in Gu and Johnson's (1996) study, the most frequently used strategies reported were the guessing from context, note taking, dictionary use, word formation, contextual coding and activation of the new words.

Attempting to devise a taxonomy of vocabulary learning strategies, Schmitt (1997) used the questionnaire as a research instrument to investigate the VLS of EFL Japanese students. The taxonomy was based on four of the language learning strategies proposed by Oxford (1990): social, memory, cognitive, and metacognitive strategies. However, as Schmitt (1997) noticed, Oxford's taxonomy of LLS was not appropriate for the study of vocabulary learning strategies for several reasons. Firstly, there was no category in Oxford's taxonomy that would refer to learners' discovering the meaning of a new word, except the asking others strategy. Secondly, in Oxford's (1990) study, memory and cognitive are distinct strategies, but Schmitt (1997) pointed out that it is sometimes difficult to classify some strategies as memory or cognitive in the case of vocabulary learning as the aim of both strategies is to aid recall of words. Nevertheless, Schmitt (1997) classified as cognitive strategies the ones using various mechanical means to memorize words (e.g. verbal repetition, the use of a vocabulary notebook) as they are less linked to mental manipulation and memory strategies as the ones focusing on the use of traditional mnemonic techniques (e.g. keyword method) which organize mental information or make it easier to be remembered. Even though he did not want to treat memory and cognitive strategies as distinct, he recognized that given the infancy of the field, categories are still fluid and debatable. Schmitt (1997) also observed that some strategies in Oxford's (1990) taxonomy could be included in more than one group as they are used for different aims. For example, as Schmitt (1997) observes, the strategy interacting with native speakers is a social one, but it could also be a metacognitive strategy if included in a language learning plan. Therefore, as Schmitt (1997) noticed, if

a strategy has different aims in different situations, then the classification system might be affected as well.

Based on the observations on Oxford's (1990) taxonomy, Schmitt (1997) divided his taxonomy into two main categories, strategies to discover a new word and strategies used to consolidate the meaning of a new word.

The first group of strategies, the discovering of a new word's meaning contains determination strategies (e.g. guessing from context) and social strategies (e.g. ask the classmate for meaning). The second group of strategies, aiming at consolidating the meaning of a word contains four types of strategies: social strategies (e.g. interact with native speakers), cognitive strategies (e.g. keep a vocabulary notebook), metacognitive strategies (e.g. spaced-word practice) and memory strategies (the use of certain mnemonic techniques). Compared to Oxford (1990), he distinguished the memory and cognitive strategies better and gave considerable attention to the discovering of a new word's meaning strategies highlighting that the strategies used in this group can also be used as consolidation strategies.

In the study that enabled Schmitt (1997) to devise a comprehensive taxonomy of VLS, he investigated the vocabulary behavior of 600 EFL Japanese learners from junior high school but also university and adult learners with the purpose to gather information about the VLS used by them and also to evaluate their usefulness. According to his findings, the most used strategies included: the use of a bilingual dictionary (85%), asking classmates for word meaning (73%), written repetition (76%), studying the spelling (74%), guessing from textual context (74%), saying the new word aloud (69%), verbal

repetition (76%). On the other hand, the least used strategies referred to the performance of physical actions (13%), the use of semantic maps (9%) and of L1 cognates (11%), which is not surprising given the language distance between the two languages. Likewise, the findings revealed that there is a low correlation between the most used strategies and the ones students considered most helpful.

Schmitt's (1997) study is important as it gave us a valuable instrument to research vocabulary learning strategies which has represented the starting point of other studies on VLS, such as the one conducted by Kudo (1999) or Catalán (2003) but also because it synthetized the strategies used by EFL students in a very cohesive way. Catalán (2003) identified several advantages in using the taxonomy proposed by Schmitt (1997) among which, the fact that it can be easily standardized, it can be applied to students of various ages, regardless of educational background and target languages, it allows comparison with other studies and it is based on theories of learning strategies as well as theories of memory.

Nation (2001) proposed a different type of vocabulary learning strategy taxonomy. Its distinctive character consists of the fact that it involves different aspects of vocabulary learning. Accordingly, Nation's (2001) rationale was to separate the features of vocabulary knowledge from the sources of vocabulary knowledge and also from the vocabulary learning process. Hence, he divided the strategies in three classes, 'planning', 'source' and 'processes', each of these having a set of key strategies.

'Planning' refers to where, how often and how to pay attention to a vocabulary item. Therefore, the strategies in this category reflect the choice of words, of various aspects regarding word knowledge,

of strategies but also the planning of the repetition of that particular item. The planning phase of vocabulary learning shares features with the metacognitive strategies category as it includes strategies to self-regulate learning. Consequently, students' capacity to manage their own learning is taken into account by vocabulary researchers, which is supported by Tseng, Dörnyei and Schmitt (2006), who argued that students' ability to organize learning is more important than the frequency of use of any strategy.

The second category in Nation's (2001) taxonomy, 'source', involves the learner getting information about a word. Accordingly, the learner can find any information about a word, and the information can be collected from different sources, such as dictionaries, glossaries, context, from the form itself but also from various connections or even analogies with other languages. This category is quite similar to Schmitt's (1997) discovering the new word's meaning category since they both provide means or sources through which a learner can discover the meaning of a new word.

The last category, 'processes', involves enhancing knowledge of a word by retrieving, noticing and generating strategies. Noticing represents the first type of strategies in the processes group, referring to seeing the word to be learned using several strategies (e.g. copying the word in a vocabulary notebook, repeating the word orally or just writing the word on card). Nation (2001) considers that these strategies help the learner process the words. Retrieval suggests recalling the items encountered before but in the same way they were previously collected. The last category in the third group, the generating strategies, implies attaching a new type of knowledge to a word, through word analysis, scales, grids and semantic mapping.

Accordingly, the generating strategies category normally refers to associating new knowledge of words with already known knowledge. The generating strategies category also refers to creating sentences containing the new word, collocations, using the word in a new context. The strategies in this category strengthen learners' memorization strategies and they could be classified as memory and cognitive strategies.

Although Nation's (2001) taxonomy is not as broad as Schmitt's (1997) taxonomy, it is constructed around concrete practical categories, which can be used in a program of strategy learner training for instance. Nation's (2001) taxonomy is important as it provides a different perspective to a possible conceptualization of vocabulary learning strategies while also allowing comparisons with the previous taxonomies.

The studies and taxonomies discussed so far have been influential in the literature on VLS as they each attempted to improve a previous existing taxonomy. Therefore, more recent studies on VLS (Catalán, 2003, Fan, 2003, Kovanen, 2014) do not add new strategies to Schmitt's (1997) taxonomy, but rather apply the existing questionnaire to students of various ages and from different cultural backgrounds.

Intaraprasert's (2004) taxonomy contains strategies similar to Schmitt's (1997) strategies for discovering and consolidating the meaning of a new word. Furthermore, Intaraprasert (2004) also investigated learners' actions when trying to learn new words outside the classroom. The study is relevant for the current dissertation as it mentions the strategy of looking up words in online dictionaries, speaking Thai with English-loan words, keeping words on the

computer background, which are strategies that have not been included in the previous taxonomies.

This brief review of VLS taxonomies revealed that researchers were especially interested in finding out which are the most used VLS and the most helpful, along with the relationship between strategy use and learning outcomes. Also, the majority of studies investigated the strategies used by adult university students while Schmitt, (1997), Kudo, (1999) Catalán (2003) also included other age groups. None of the studies reviewed here focused on the frequency of use of individual vocabulary learning strategies or types of strategies, or the strategies students might use in the context of computer and mobile assisted language learning.

3.5. Explicit and incidental learning of vocabulary

This section discusses two foundational approaches to vocabulary learning, the explicit and incidental learning of vocabulary while it also lays the theoretical foundation behind students' approaches to vocabulary learning. Given that the vocabulary learning strategies students use are based on the features which define the two approaches in vocabulary learning, the reviewing of this topic is important. Schmitt (2000) defined incidental learning as 1) learning without intention, 2) the learning of one thing while the learner is actually focused on doing something else (e.g. reading a text, listening). In the case of incidental learning, the learner is generally aware during the activity that learning occurs whereas implicit learning is defined by lack of awareness of the learning process. Intentional/explicit learning is defined by Hulstjin (2001, p. 271) as

"any activity geared at committing lexical information to memory" or learning with intention.

Hunt and Beglar (1998) stated that incidental vocabulary learning is a useful way to acquire vocabularies for advanced learners whereas intentional/explicit learning is highly important for beginners. Accordingly, explicit learning implies learning vocabulary out of context, from word lists but it also happens when we look up words in the dictionary while reading. On the other side, incidental learning of vocabulary involves students guessing the meaning of words from context or looking up words in a monolingual dictionary. Yet, inferring word meanings requires inference skills and still incorrect guessing may occur (Sökmen, 1997).

Nation (2001) demonstrates that the 2,000 most frequent words cover up to 80% of a text, the academic words can cover up to 9% of a text while technical words cover 5% of a text. The rest represents a great number of low frequency words (15,000–20,000) which cover only 5% of a text. Consequently, the first three types could cover up to 95% of a text, meaning that for this reason they are very important to learn. From this perspective, Ma (2009) believes that both teachers and learners should give special attention to these types of words through direct teaching, direct learning (via word cards and dictionaries), repeated encounters with the words in vocabulary exercises, graded readers and through incidental learning forms as well. Nation (2001) asserts that as far as low frequency words are concerned, teachers ought to train learners to use strategies such as memory techniques, guessing, dictionary use, vocabulary cards in order to increase their vocabulary.

Accordingly, I believe an explicit approach is useful in all learning stages as the more one manipulates a word the more likely it is to be remembered (Schmitt, 2000). Learning the first 2,000 most frequent words in an explicit way and increasing the depth of knowledge of these words through incidental learning is a desirable outcome in terms of explicit-incidental vocabulary learning.

Nation (2011) focuses on several intentional learning strategies to be used by students, such as word cards, studying word parts and dictionary use. Word parts represent the study of affixes and word root enabling learners to associate new words with already known words/affixes or roots, this strategy may help learners to check whether the new word is accurately guessed or not.

Furthermore, Nation (2001) believes that the most efficient way to intentionally learn words is via word cards. Learning vocabulary through word cards involves writing the unknown L2 words or phrases on small cards and writing the L1 translation on the other side. Then the learner goes through the cards at spaced intervals until the translations are known which ensures receptive learning (Nation, 2011). Likewise by trying to recall the word forms as well, productive learning could occur.

Nation (2001) considers that certain mnemonic techniques are also very helpful in deliberate vocabulary learning, especially the low frequency ones. Such mnemonic techniques include the keyword method- associating the L2 word with a an L1 keyword that sounds like the beginning of the L2 word and then the learner makes an image which involves the meaning of the keyword and the meaning of the new word. Even if studies (Brown and Perry, 1991; Moore and Surber, 1992; Pressley, Levin, Kuiper, Bryant, Michener, 1982;

Avila and Sadoski, 1996) have shown the usefulness of this method over the years by comparing it with other forms of deliberate learning, such as rote memorization, learning with pictures, learning with several synonyms, learning in context, imagining the meaning of a word, this method requires training on the part of the teacher and also further repetition of the word as the use of the method in itself does not guarantee the retention of the word for too long. Given the fast-paced rhythm of the students' lives and their preference for immediate learning, I believe that rote memorization and the use of complicated mnemonic techniques do not have a stable position anymore within the current learning environment. I believe students are likely to ask for more appealing ways of engaging with word learning. Choosing efficient and enjoyable deliberate learning activities may be challenging, however, Schmitt (2008) lists a few key principles which facilitate the choosing of appropriate vocabulary learning activities.

The first principle reflects the selection of activities that help the learner engage with the words, which facilitates vocabulary learning in general. This implies that learners need exposure with the new words through both explicit and incidental vocabulary learning as this will entail better learning and vocabulary retention. Another principle is to ensure maximized exposure to target lexical items as repeated exposure improves retention of words. Moreover, Nation (1990) considers that it is more important to consolidate taught words than to constantly teach new ones, which is why recycling needs to be part of a vocabulary learning program. The third principle would take into account the various aspects of lexical knowledge that one needs to focus on. Since most vocabulary

tasks focus on introducing the meaning of new words, without taking into account the various kinds of word knowledge, it becomes rather necessary to also consider the other aspects of word knowledge. Therefore, there are various degrees of knowing a word. For example, recognizing the word's form might entail a certain form of knowledge, though minimal. Also, the knowledge of a word's meaning means something more than knowing only the form. Moreover, if the collocations of a word are also known, then it adds something more to the word knowledge.

Generally, there are two perspectives on incidental learning. One of them regards the benefits of incidental learning of vocabulary and sees it as effective and effortless for the learner (Huckin and Coady, 1999). They show the following benefits of incidental learning:

- Vocabulary learnt incidentally is contextualized;
- It is pedagogically efficient because it involves both reading/ listening and vocabulary acquisition;
- It is more individualized as the learner is free to choose the words to learn.

Vocabulary learnt incidentally is contextualized, however, a great amount of words from that context need to be understood by learners (Nation, 2004). Folse (2004) also suggests that only large amounts of reading can actually lead to vocabulary improvement. Moreover he pinpoints that the use of context clues is a reading-improvement strategy, not a vocabulary-improvement strategy. Therefore, reading could result in vocabulary improvement, but generally vocabulary improvement occurs when learners do practice activities that focus their attention on specific words (Folse, 2004).

The second perspective on incidental learning refers to the drawbacks it involves. Ma (2009) stated that incidental learning implies a great deal of contextual guessing, which sometimes is not possible as some researchers pointed out (Ames, 1966; Beck, McKeown, McCaslin, 1983, cited in Duquette et al, 1998). Likewise, even if the learner looks up the unknown words in the dictionary, it is unlikely to retain more than half of the words (Hulstijn, 1992). Hulstijn (1992) implied that retention rates in incidental learning are quite low, as 5 to 16 exposures are needed to acquire a specific word (Nation, 1990). Furthermore, vocabulary learnt incidentally leads to recognition rather than production (Paribakht, Wesche, 1997, Ma, 2009) because reading is a meaning-focused activity and the learners may not pay too much attention to other features involving word knowledge.

As to the number of exposures needed to retain a word, there are several studies (Rott, 1999; Pigada and Schmitt, 2006; Waring and Takaki, 2003) which claim different exposure numbers, however, I believe that the number of exposures is not such a crucial factor determining word retention and I am more inclined to be in line with Zahar, Cobb and Spada (2001) who stated that the more proficient a learner is, the less number of exposures he needs.

Inferring word meaning from context is considered a useful guessing strategy by students and it is the most used strategy in dealing with the meaning of unknown words (Schmitt, 1997; Zechmeister et al., 1993). While it is the most used strategy in determining the meaning of a new word, it is not the most effective. In this respect, Nassaji (2003) revealed that in his study out of 199 guesses, only 25.6% were successful and 18.6% were partially successful. Liu

and Nation (1985) pointed out that successful guessing implies that the learners need to know at least 96% of the words in a text. They also stated that verbs were easier to guess than nouns and that nouns were easier to guess than adjectives. Likewise, higher proficiency learners were better at guessing words from context than the lower ones. Schmitt (2008) suggests that these results mean that guessing is actually a skill which needs to be taught. Consequently, guessing from context is useful, in the sense that it can lead to vocabulary learning, however, there are limitations that one needs to be aware of.

Glossing is another strategy to use in incidental learning, much more useful than other forms of incidental learning, such as guessing from context (Nation, 2001). Glossing offers the correct meaning of a word and it draws attention to the words needed to be acquired. Research (Haynes, 1993; Hulstjin et al., 1996) acknowledges that glossing prevents learners from making wrong guesses and that students using glosses learn more than those using the dictionary. Nowadays, electronic reading texts with glosses and annotations seem to be very popular since the information provided by electronic glosses is quickly accessed. Likewise, these types of glosses are more attractive as the learner can not only have access to textual information about a word, but also listen to the pronunciation of a word, look at a picture or watch a video related to the word, enabling the learner to become simultaneously familiar with several aspects related to word knowledge.

Schmitt (2008) considers that any type of incidental learning should be further accompanied by other intentional learning activities. Consequently, intentional and incidental approaches are most likely

complementary as reading and listening activities provide valuable opportunities to consolidate explicitly taught words (Schmitt, 2008). I am in favor of a "mixed approach" (Coady, 1993, p. 17) as by accepting the advantages and disadvantages of both approaches, I assume that there is no best way to acquire vocabulary and that most learning occurs as a combination of explicit vocabulary instruction, extensive reading and listening and also of vocabulary exercises. I believe that these two approaches do not exclude each other but they are mostly complementary.

3.6. Review of VLS studies investigating the gender, age, academic profile and language profile variables

The current section provides a theoretical justification for the choice of variables taken into account in the current study by reviewing studies which investigated similar variables.

3.6.1. Students' gender

Some investigations carried out in the field of gender and language learning have revealed that females use more strategies than males and that there are also differences in the type of strategies, females preferring more social strategies (Politzer, 1983; Ehrman and Oxford 1989). Females are also reported to use more study strategies and rule-related strategies (Ehrman and Oxford, 1989, Oxford and Nyikos, 1989), conversational elicitation strategies (Oxford and Nyikos 1989, Gass and Varonis 1986), monitoring strategies in

comprehension (Oxford and Nyikos 1989, Bacon, 1992), rehearsing and planning strategies (Ehrman and Oxford 1989, Bacon and Finnemann 1992).

Catalán (2003) also confirms that males and females differ in both quantity and type of strategies, females preferring input elicitation, rehearsal and planning strategies, formal rules, whereas males prefer visual and tactile learning of vocabulary. Catalán (2003) also points out that females' higher use of consolidation and discovery strategy could be related to females' higher degree of motivation in learning a foreign language. She also asserts that the differences in memory strategies and formal rule between females and males could suggest distinct learning styles and learning preferences.

Rúa (2006) concludes, based on the data reviewed in her article, that although both females and males have the same linguistic potential, females' linguistic skills are more likely to achieve higher levels. As to gender differences in the use of technology for vocabulary learning, more general studies on the use of ICT in education (Houtz and Gupta, 2001; Shashaani and Khalili, 2001; Margolis and Fisher, 2002; Broos, 2005) showed existing differences between males and females in favor of males. However, overall, there is little empirical evidence in the literature to show how males and females use technology enhanced tools for vocabulary learning.

3.6.2. Students' academic profile

The current study investigates the differences in vocabulary learning strategies between students enrolled in different academic profiles. There are four types of academic profiles represented in the current study: humanities, science, math-ICT and economic-technical.

Studies which investigated differences in strategy use across students majoring in different disciplines showed that this type of variable can also make a difference in strategy use. In this context, Oxford and Nyikos (1989) stated that university major was a key factor that determined the participants' choice of vocabulary learning strategies. They found that humanities/ social sciences/ education majors would use more strategies than the technical or business profiles. Gu (2002) has also investigated whether students' academic major, arts and science in his study, are related to the vocabulary learning strategies used by Chinese EFL students as well as their learning results. The study revealed that at least in the Chinese EFL context there have not been found any significant differences between the vocabulary learning strategies of these two categories of students. According to Gu (2002), arts students outperformed the science students on general proficiency, but not on vocabulary size.

Peacock and Hu (2003) also found differences in language strategy use across students majoring in eight different disciplines. They found that students majoring in English had a higher use of overall strategies being followed by students majoring in primary education, business, math, science, engineering, building and computer science. Also, across the six categories of language learning strategies, students majoring in English reported a higher use of the cognitive, metacognitive and social categories than students enrolled in different disciplines. As to the use of digital tools by students enrolled in different academic profiles, I am not aware of any studies investigating this variable in relationship with digital tools use.

3.6.3. Students' age

The age factor has mostly been researched from the point of view of language success by Scarcella and Oxford (1992), Schleppegrell (1987). These authors identified the differences in terms of language learning achievements between young learners and older students.

Muñoz (2006) reviews studies which have focused on school aged children as far as differences in learning strategies are concerned. Among the cross-sectional studies with school-aged learners, the results found by Zimmerman and Martinez-Pons (1990, cited in Muñoz, 2006), Grenfell and Harris (1999, cited in Muñoz) and Schoonen et al. (1998, cited in Muñoz 2006), showed that for some learning strategies there is a developmental trend across learners of different ages, using different learning strategies at different ages. However, the authors do not state which strategies are used at what stages. These findings are also supported by Nyikos (1987, cited in Oxford and Crookall, 1989) and by Takeuchi's study (2003, cited in Muñoz, 2006), whose subjects acknowledged a "shift in the strategies used according to their learning stages" (2003, p. 391).

Victori and Tragant (2003, cited in Muñoz, 2006) also conducted a study analyzing the differences between groups of EFL learners enrolled in different grades and of various ages. In their study the older students reported a wider use of strategies. Likewise, when grouped by age, Peacock and Hu (2003) found significant differences between the two age groups, with the mature students (aged 23 and over) reporting to use more strategies than the younger students.

Muñoz (2006) also researched the developmental pattern of EFL learners' strategic behavior. The data supported the fact that

developmental changes in strategy use occur with age, irrespective of learners' level or learning stage. However, she pointed out that these results are not the same for all types of strategies. It is important to mention that these studies focusing on the relationship between age and strategies focused mostly on learning strategies, not specifically on vocabulary learning strategies.

3.6.4. Students' language program

The current study investigates the differences in vocabulary strategy use between students studying English as a foreign language in an intensive, bilingual or regular program, the main differences between these programs consisting in the number of English lessons per week. Therefore, the assumption is that the more English lessons one has, the more learning strategies one is likely to use. In this context, Hong-Nam and Leavell (2006) focused on the particularities of language learning strategies of ESL students in an intensive English learning context. Their study indicated that English language learners enrolled in an intensive English program are aware of the importance of learning strategies as part of their learning process. They were also reported to have a high preference for metacognitive and social strategies.

In the field of vocabulary learning strategies, previous language learning experiences, defined either in terms of years of study or levels achieved so far by the students, have been reported to determine the vocabulary learning strategies used by students (Oxford and Nyikos, 1989). In the context of the current study, language learning experience is defined by the type of English program students follow at school.

3.6.5. Linguistic and cultural background

In this context, Swan (1997, p. 163) states that language distance has an effect on the "amount of transfer that can take place between languages" and that "related languages often share a great deal of cognate vocabulary, and even when vocabulary is not cognate, there tend to be close translation equivalents: this can give learners an enormous advantage." Studies (cited by Swan, 1997) have shown that Swedish and Spanish speaking learners of English acquire vocabulary faster than Finnish and Arabic speakers. While Swedish and English have strong syntactic and lexical similarities, Spanish and English have shared lexical similarities through a Graeco-Latin vocabulary. Also Swan (1997) points out that it is not only language distance that can affect the ease or difficulty of learning a foreign language, but also cultural distance. Swan (1997) explains that although a Hungarian learner of Spanish would not find any cognates between the two languages, he/she would still find that the new words in Spanish express concepts that a Hungarian learner would be familiar with, therefore semantic transfer is possible.

Likewise, several other studies (Bedell and Oxford, 1996, Grainger, 1997, Oxford and Burry-Stock, 1995, Politzer, 1983, Reid, 1987, Wharton, 2000) found that cultural background is related to language strategy use.

The conclusion drawn from the above sections on variables is that Romanian students' choice of vocabulary learning strategies could be mediated by a combination of factors which may operate differently in the social context where the study takes place. The hypothesis put forward here is that students' use of vocabulary

learning strategies as well as of digital tools is also enhanced by the interaction of gender, age, national origin, academic profile, language program with each of these variable playing a different role.

3.7. Vocabulary learning approaches in a Computer and Mobile Assisted Language Learning context

While the previous sections reviewed well-known vocabulary learning taxonomies and studies investigating similar variables as the current investigation, the following sections discuss vocabulary learning strategies in a computer and mobile assisted language learning context. Vocabulary learning in a computer and mobile assisted language learning context refers to the possibilities offered by technology in order to learn or consolidate English vocabulary. The technological opportunities can have either an incidental or explicit nature but most often technology encompasses these two approaches.

According to Underwood, Luckin and Winters (2014), technology eases several activities that have a contribution to vocabulary learning. These authors also give some examples to illustrate how vocabulary learning is supported by technology. Therefore, rich associations could be promoted through reception and production of multimedia; games and social media offer various opportunities for practice; learners could look up vocabulary, capture, share anytime, anywhere; noticing and processing are stimulated through glossing, automated highlighting and embedding questions about target vocabulary in texts; exposure could also be increased as target language can be

inserted in learners' daily interactions; technology can also make vocabulary and tasks more meaningful and adapted to learners' interests and social settings; also spaced review, retrieval, testing, use of vocabulary, look up, can all be prompted through system notifications, messaging and flashcards (Underwood, Luckin and Winters, 2014).

Mobile Assisted Language Learning (MALL) is a sub-area of Computer Assisted Language Learning (CALL) which uses mobile devices instead of a computer in order to deliver educational content. Kukulska-Hulme and Shield (2008) believe that MALL is different from CALL, as MALL uses personal mobile devices which allows for new ways of learning to occur. Likewise Kukulska-Hulme (2009) acknowledged that MALL helps to better make a distinction between formal learning in the classroom and informal learning outside the classroom.

Burston (2014) points out that definitions of mobile learning fall into two categories, depending on whether the main importance is given to the mobility of the learner or to the use of the mobile device. In this context, Sharples, Taylor and Vavoula (2005, p. 5) consider that "it is the learner that is mobile, rather than the technology… interactions between learning and technology are complex and varied, with learners opportunistically appropriating whatever technology is ready to hand as they move between settings, including mobile and fixed phones, their own and other people's computers, as well as books and notepads." This definition focuses on the mobility of the learner rather than the use of a mobile device while suggesting that basically any kind of technology characterized by flexibility stands for mobile learning.

On the other hand, Kukulska-Hulme and Shield (2008, p.273) propose a definition of mobile learning which focuses on the use of portable technology: "For our purposes, then, 'mobile learning' refers to learning mediated via handheld devices and potentially available anytime, anywhere." In the same context, Palalas (2011, p. 76–77) attempts to incorporate both aspects of mobile learning by stating that "MALL can be defined as language learning enabled by the mobility of the learner and…portability of handheld devices…"

In the past, mobile devices incorporated in MALL have included MP3 players, personal digital assistants (PDA) and mobile phones. The iPod as well as other MP3 players provided audio playback as well as recording opportunities. The PDA enabled the users to access the Internet as well as very basic computer programming facilities whereas the mobile enabled voice and text communication (Burston, 2014). Chinnery (2006) investigated the state of mobile language learning focusing on projects which used phones for vocabulary practice, live tutoring, quiz delivery, email lesson content delivery. Chinnery's (2006) findings revealed that there were several problems associated with these devices, such as small screens, poor audio quality, limited storage memory and also slow Internet connectivity. Likewise, as Godwin-Jones (2011) points out, the operating systems (Palm OS, Windows Mobile, Nokia Symbian) were very limited. Moreover there were few apps which could be loaded onto those systems and web browsing was slow (Godwin-Jones, 2011). Burston (2014) also observes that the early attempts to incorporate these devices in education were not very successful given several technological limitations. However, since 2007 and the arrival of Apple iPhone, Android devices and Windows 7 products, these limitations

have been gradually overcome. These devices are now associated with mini computers given their multiple functionalities (Godwin-Jones, 2011).

Macaro et al. (2012) presented a key word map of 117 studies of technology in L2 learning since 1990, followed by an in-depth review of 47 studies conducted after 2000 focused on the usefulness of technology in L2 teaching and learning. Macaro et al. (2012) investigated whether these empirical research studies bring any evidence to support the development of language skills. The overview of the keyword map included the review of 117 studies conducted between 1991 and 2010. This revealed that the largest number of studies focused on vocabulary (24%) and writing (24%), followed by reading (22%), speaking (11%), listening (10%), grammar (7%), pronunciation (3%). Also the most frequently studied technologies were multimedia (22%), followed by computer mediated communication (CMC) technologies and the Internet (15%). As far as research methodology, they mostly used mixed methods (44%), more using qualitative methods (31%), than quantitative ones (23%). Also, what is significant is that the most popular sample size was 21–30 participants. Macaro et al. (2012) also observed that 71 studies did not indicate the gender of the participants, which was a rather intriguing aspect since girls and boys are attracted to different aspects of ICT, with boys being more interested in problem-solving activities and technical aspects and girls focusing more on the social side and the creativity aspect (Volman, van Eck, Heemskerk and Kuiper, 2005 cited in Macaro et al., 2012). Following this review, the authors also conducted an in-depth review of studies from 2001 to 2010 related to EFL or ESL teaching in primary and secondary

identifying 47 studies. Also like in the previous review, few studies indicated the gender of the participants (n=20) whereas in the majority of the studies (n=22) gender was reported as mixt and not used as a variable. Also the majority of these studies researched reading (36%), writing (36%), vocabulary (32%), followed by speaking (19%), listening (17%), grammar (6%), pronunciation (6%). The technologies these studies researched were multimedia (21%) and CMC (23%). As far as the methodology used, 49% used mixed methods, 28% used quantitative methods whereas 23% used qualitative methods. While trying to identify the reasons for which these studies were conducted, Macaro et al. (2012) observed that reasons were very vague and most often very connected to the context of the study. Moreover, they also observed that research was most often driven by policy rather than L2 acquisition and learning theories. Policies focus mostly on the impetus of having a population who can use such technologies, not on the benefits of using such technologies. Therefore, Macaro et al. (2012) considered that future research should investigate how we can better use technology for language learning.

Likewise, Macaro et al. (2012) focused specifically on studies investigating the benefits of CALL for vocabulary learning. Their review of vocabulary studies (e.g. Kim and Gilman, 2008; Nakata, 2008; Li, 2010; Dyned, 2011; Zhang et al, 2007, Sasaki and Takeuchi, 2010; Chen and Li, 2010; Silverman and Hines, 2009; Tsou, Wang and Li, 2002; O'Hara and Pritchard, 2008; Lu, 2008; Proctor, Dalton and Grisham, 2007 cited in Macaro et al., 2012) showed some potential language learning benefits of CALL. Yet, the authors suggested that the results of these studies are inconclusive, especially, those

claiming that CALL eases vocabulary acquisition given several problems related to data analysis and methodology of the studies. Macaro et al. (2012) concluded that the review of vocabulary studies indicates that it is very unlikely to recommend any of the technologies used in the studies for vocabulary development. Consequently, the outcomes reported are not really related to any previous research evidence or theory and there is not enough justification as to why a certain technology facilitates vocabulary acquisition.

Macaro et al. (2012) also identified the non-linguistic benefits of using technology, especially learners' attitudes, confidence and anxiety and learning behaviors. As far as learners' attitude is concerned, studies (Lu, 2008, Nakata, 2008, O'Hara and Pritchard, 2008, Liu and Chu, 2010, cited in Macaro et al., 2012) reported that students' attitudes towards CALL were positive. Yet, as Macaro et al. (2012) suggested, these studies were conducted over short periods of time, therefore students' attitudes might have been affected by the novelty of the technology used. Macaro et al. (2012) considered, based on the studies reviewed, that technology is likely to affect students' learning experiences and that various classroom behaviors could also be improved by the use of these technologies beyond linguistic outcomes.

3.7.1. Incidental and explicit vocabulary learning approaches with CALL and MALL

The following sections exemplify different ways in which incidental and explicit vocabulary learning activities are embedded in a computer and mobile learning environment, especially the digital tools students could use in their vocabulary learning.

3.7.1.1. Computer assisted vocabulary learning (CAVL) programs

Dedicated CAVL programs are based on language learning or acquisition theories which are implemented in various learning tasks, presenting vocabulary in a very specific and systematic way (Ma, 2009). Within these programs, vocabulary is both meaning and form focused, they provide both initial learning of words as well as further rehearsal of words (Ma, 2009). Furthermore, Ma (2009) distinguishes between research-based CAVL programs and commercial programs.

The research based-programs included Lexica (described by Goodfellow, 1995, 1999), CAVOCA, an acronym for Computer Assisted VOCabulary Acquisition (Groot, 2000) and Wordchip (Decco et al., 1996), the software WUFUN (Ma, 2013). Ma's (2009) presentation of these programs is based on empirical evaluation. From a pedagogical perspective, they reflect both implicit, meaning-focused learning as well as explicit, form-focused learning. She also observed that they do not include any specific learning strategies, also she states that learners' attitude towards these programs has not been researched. Likewise, it is difficult to say the impact that the use of the programs has had on students.

One the other side, Ma (2009) analyzed the following commercial based CAVL programs and software packages:

- SuperMemo (http://www.supermemo.com/), a software package developed in Poland with the purpose to improve memorization of learning materials;
- Rosetta Stone (http://www.rosettastone.com/en/), a languages learning package;

- Intelligent Miracle English (http://www.qjnet.net/), an English vocabulary learning software package developed in China;
- Memorizing Vocabulary Effortlessly (MVE), another software package developed in China especially for learning English vocabulary;
- Tell Me More (http://v7.e-tmm.com/portal/modportal.axrq), covering ten languages designed for general language learning, English+, a language learning package, where vocabulary is presented separately, not integrated into the reading, speaking, listening and writing sections, however, the explicit meaning of lexical items is not given explicitly, so the learner needs to guess out the meaning of lexical items;
- Language Interactive Culture (http://webhost.ua.ac.be/linc/linc.html), a language learning software package, developed in Belgium, covering 18 European languages. Even though the program is aimed at general language learning, it gives significant attention to vocabulary.
- Anki (http://ankisrs.net/index.html) provides a platform for storing and testing new vocabulary, in addition it contains lists of vocabulary items for various levels;
- Linkword (http://www.linkwordlanguages.com/) is a website which provides vocabulary exercises using the keyword method;
- Pimsleur (http://www.pimsleurapproach.com/resources/language-research/#language), a software package for general language learning;
- *iKnow!* Software (http://maki.typepad.com/justhungry/2008/01/iknow---a-slick.html).

The analysis of these programs was based on four criteria: vocabulary learning strategies, learning motivation, vocabulary processing level and also the level of vocabulary gain. Depending on the country of origin of such programs, a different approach to vocabulary is adopted (Ma, 2009). For instance, two programs (Intelligent Miracle English and Memorizing vocabulary effortlessly), developed in China, reflect a traditional Chinese approach to learning, focusing especially on word forms rather than lexical meaning and use. On the other hand, other programs, produced in the EU or USA, provide a more equitable focus on the word form and meaning issue.

These programs share though some common features, as they tend to draw on SLA research up to a certain extent. For instance, Intelligent Miracle English, Memorizing vocabulary effortlessly and SuperMemo are based on the spaced repetition principle. The multimedia features are elaborated in Rosetta Stone while Tell Me More reflects the research findings as far as the mental lexicon is concerned. Also Ma (2009) notices that in general the commercial programs focus on one or mostly two SLA research related features, while overlooking the others and that these programs would be more productive if they included other learning activities as well.

3.7.1.2. Computer-based vocabulary exercises (CVE)

Computer based exercises could be used to either practise vocabulary or learn new vocabulary items (Allum, 2004). Learning is explicit as users pay mostly attention to the word forms and word meanings. Allum (2004) reviews CVE by making reference to Nation's (2001) three stages of learning new vocabulary: noticing, retrieval and generative use. For instance, according to Allum (2004) in CVE, the

noticing stage is achieved by simply matching the L2 words with their L1 meanings. This can be done through drag and drop type of exercises. The students can guess the meanings with the help of feedback provided. The retrieval stage mirrors the productive and receptive use of target words. The receptive type of exercises implies matching a definition sentence to a target word, or choosing from a list the target word which matches a given definition whereas the productive type of exercises requires the learner to type in the target word corresponding to a given definition. The generative use involves the integration of both receptive and productive retrieval of words in various contexts. Likewise, Ma (2009) considers that all types of CVE might be useful in consolidating the knowledge of new words. This type of tasks enables the learners to better focus on specific items in either contextualized or decontextualized learning episodes.

3.7.1.3. Online dictionaries

Nowadays web-based dictionaries are highly developed and used as they present several advantages, such as the response to learners' input intelligently (for example if the learner does not know the exact spelling of a word, the dictionary will generate several morphological possibilities based on the learner's input), secondly they display only the necessary information, leaving the learner to decide whether more information is needed or not. Also information about a word can be given in various ways, aurally, pictorially and textually (Ma, 2009). The various dictionary apps respond very well to learners' need for activities which both meet their daily interests and also enhance learning. The main limitation

though is that not all students may own a smartphone and also that some dictionary apps might not be free of charge.

3.7.1.4. Lexical concordancers

A concordancer represents a piece of software that looks up a corpus for a word or phrase and shows all the instances in which that word or phrase appears. Once entering a word into a lexical concordancer, the program generates lines that contain the word entered and the learner can infer the meaning or just observe the patterns in which that word occurs. This feature enables users to guess the meaning of the new word from the contextual cues, but also to discover new meanings of a word, increasing thus depth of knowledge of a word. There are several drawbacks which might impinge on students' use of lexical concordancers.

Firstly, learners should be able to understand the authentic language in which a word occurs so that they could infer its meaning, secondly learners need training to be able to use efficiently such concordancers, thirdly, the fact that in order for vocabulary learning to occur, one needs to practise the words searched in the concordancers, therefore they should integrate lexical exercises. Horst, Cobb and Nicolae (2005), Hafner and Candlin (2007) tried to integrate such concordancers into CAVL applications. There are two basic types of lexical concordancers, monolingual and bi-/multi-lingual (Ma, 2009). Within a monolingual concordance, the meaning of the item is not given explicitly, but the user has to infer the meaning from the context the word appears in. On the other hand, bilingual lexical concordancers give the lexical meaning directly by means of an L1 translation. One of the features of some lexical concordancers is

that word usage is not given and it is up to the user to notice how the word is used in various contexts (Ma, 2009).

3.7.1.5. Electronic lexical glosses

Electronic lexical glosses represent incidental digital tools for vocabulary learning, a type of vocabulary activity that offers learners the opportunity to manipulate their own learning, as they are free to scroll up and down the page, to pause the listening text and to look up the unknown words via hyperlinks or annotations. At this stage the learning is rather incidental since learners mostly want to understand the global meaning of the text. These lexical glosses have the function to carry out the learners' demand (Ma, 2009) in a very prompt way, meeting thus the learners' need for immediacy while also providing information about a word in various ways, auditory, pictorial or textual, contributing to a better retention of words. Jones (2000) observed that nowadays online texts are much more easily comprehensible to learners because of the availability of computerized glosses. There are several other studies (Yeh and Wang 2003, Yoshii, 2006, Yanguas, 2009) which indicated the effectiveness of multimedia glosses and implicitly of CALL on incidental vocabulary learning.

3.7.1.6. Computer-mediated communication lexical-based tasks

Computer-mediated communication (CMC) is defined as "synchronous or asynchronous electronic mail and computer conferencing, by which senders encode in text messages that are relayed from senders' computers to receivers" (Walther, 1992, p. 52). Nowadays CMC is not something new anymore and much of the interactions on a daily basis take place through this medium. There are two types

of CMC tasks, asynchronous email/text messages and synchronous communication. Asynchronous communication refers to activities taking place outside of real time (e.g. learners sending emails to their teachers or other learners, which require a delayed response) while synchronous, or real-time, communication takes place like a conversation and in an online environment involving the use of chats.

These two types of online communication have been widely researched within the framework of interactionist SLA (Long, 1996) for their potential in promoting language development. Ma (2013) asserts that in order for vocabulary acquisition to occur within the CMC tasks, there are two conditions to respect. Firstly, the task should be information-gap like, so that the learners negotiate the meaning of the required lexical item. If this condition is followed, then the learner is likely to use the new lexical item in a subsequent output, which equates with "pushed output" (Swain, 1995), leading to further consolidation of the item. However, it is rather difficult to track users' action when involved in CMC tasks, therefore there are very few studies to look at the relationship between users' actions and their learning outcomes. Ma (2009) believes that CMC lexical-based tasks give evidence of learners' noticing of new vocabulary items, which is an essential condition for lexical acquisition. However, these tasks are communicative in nature and their efficiency depends mostly on their design.

3.7.1.7. Mobile technology for vocabulary learning

Pegrum (2014, p. 131) considers that the 'most common MALL activity reported in the literature is vocabulary learning. Likewise, Underwood (2014) pinpoints that mobile technology could enhance

several activities that contribute to vocabulary learning and that it helps learners connect various activities across episodes for successful learning. What is very relevant for the current paper is that Underwood (2014) connects vocabulary learning research with vocabulary apps in order to better explain how vocabulary learning occurs in a mobile learning episode. Knowledge about words occurs during different episodes and vocabulary apps have embedded vocabulary learning tools, such as flashcards, dictionary tools, notebook tool, game-like activities, derived from what research stated that works best for vocabulary learning. However, as Underwood (2014) points out, there are other modalities in which mobile technology could support vocabulary learning. He enumerates in his article different ways in which mobile technology supports vocabulary learning: language capture and sharing which involves capturing observations about new words along with associated media (Pemberton and Winter, 2012); just in time communication help which represent apps that give learners communication help such as Google translate, VocabNomad-an app which provides vocabulary related to users' current location (Demmans Epp, 2013); study reminders (e.g. SMS, Whatsapp); situated and incidental learning. Dearman and Truong (2012) explained how a vocabulary wallpaper detecting location and showing target language on the phone's wallpaper could enable situated incidental learning; micro-learning in everyday activity which involves inserting target language translations in the L1 texts people read online (Trusty and Troung, 2011) or in subtitles of videos or in messaging systems while waiting for replies (Cai, Miller, Guo, Glass, 2014); noticing and processing enhancements which implies learners' interactions with a text which embeds multi-

media glosses. Accordingly, Underwood (2014) summarizes that mobile apps can significantly provide opportunities for encountering language in context, new language can be noticed more easily, they also enable one to share new vocabulary and also offer access to just in time communication help while also facilitating spatially and temporally distributed words study.

Pareja-Lora, A. et al. (2013) conducted an analysis of EFL apps and attempted a categorization of those EFL apps. These researchers assert that there are over 28,000 apps designed for educational purposes and it is unlikely that they are all based on a solid theoretical approach to teaching and learning. They also put forward the idea that these apps lack the necessary cognitive scaffolding mechanisms which would enhance learning. Accordingly, they stated that these apps tend to provide a rather fragmented language practice. However, there are apps which provide a more contextualized language practice. According to these authors the pedagogical criteria in an app are: cognitive value and pedagogic coherence, content quality, capacity to generate learning, interactivity and adaptability, motivation, whereas the technical criteria are: format and layout, usability, accessibility, visibility and compatibility. Following this comprehensive evaluation, the authors concluded that the pedagogic and technical qualities of the apps do not necessarily match their linguistic values for EFL teaching and learning. This outcome suggests that though some apps may be very attractive they may not be based on sound linguistic content.

Furthermore, Underwood, Luckin and Winters (2014) believe that mobile apps do not easily integrate activities for vocabulary learning and that they do not exploit the connection between learn-

ing and life. Likewise, Wong (2013) acknowledged that there are in fact only few studies which show designs for seamless vocabulary learning and which render features that connect incidental and explicit learning activities (Gaved et al., 2013). Also Burston (2014) points out that since 2007 the approach with MALL is behaviorist and teacher-centered as drill and repetition type of activities are still largely present in the apps. While not denying the benefits of a drill approach for language learning, Burston (2014) also believes that the "short and simple exercises" are associated with a "fragmented type of learning" matching the "anytime, anywhere" condition. Yet, Stockwell and Hubbard (2013) agree that learners interpret and make use of designs in their own way and most often they do not use the features of an app the way their designers imagined.

Underwood, Luckin and Winters (2014) support meta-design (Fisher, 2013), which would permit learners to reconfigure design in order to back up their own learning goals while making use of their preferred resources. In this context, Underwood, Luckin and Winters (2012) developed an app, miLexicon, which enables learners to gather, look up and share information about new vocabulary while providing access to a learner's favored technology and social resource. These authors support participatory designs for self-vocabulary learning by making use of social and mobile technologies. Therefore, they highlight the fact that within a learning app, learners should be allowed to configure the way they want to manage their vocabulary learning. Accordingly, there seems to be an emphasis on the role of social learning strategies within a mobile environment. The results of their study showed that the 6 participants occasionally reviewed the words they added in the app and that they rarely used

miLexicon beyond the initial look up. These results echo Luckin et al. (2012) who states that "no technology has an impact on learning in its own right, its impact depends upon how it is used." Accordingly, Luckin et al. (2012) identified the most effective learning activities and the way technology can support these activities. This means that it is not the technology used that can impact on learning, but the way one uses technology to support the most effective individual learning activities.

In conclusion, I would add that there have been studies which investigated the effectiveness of several technology-incorporated vocabulary systems (e.g. Abraham, 2008; Basoglu and Akdemir, 2010; Groot, 2000; Ma and Kelly, 2006; Oberg, 2011; Yun, 2011). These studies focused on the importance of multimedia in texts (Chun and Plass, 1996; Kayaoglu, Dag Akbas and Ozturk, 2011; Segler, Pain and Sorace, 2001), the gaming phenomenon in language learning (Miller and Hegelheimer, 2006; Ranalli, 2008; Cobb and Horst, 2011), the benefits of multimedia glosses for learning L2 vocabulary (Mohsen and Balakumar, 2011; Nation, 2001). Likewise, in a meta-analysis on games used for educational purposes, Young et al. (2012) revealed that these games have positive effects for language learning, which he explained through the social nature of both language learning and of computer games. However, the problem with these studies is that they took place in experimental situations with small sample sizes and there is no account of the number of students actually using these tools. Likewise, several other studies (Abrams, 2002; Al-Jarf, 2004; Blasszauer, 2001; Brandl, 2002; Chikamatsu, 2003; Jogan, Heredia and Aguilera, 2001; Meskill and Anthony, 2005; etc.) focused on investigating the influence of technology-enhanced instruction on

language learning, shedding light on their positive effects. However, students' perspective and actual digital word learning behavior have been overlooked in research.

3.8. Attitudes and engagement with vocabulary learning in a CALL and MALL context

In the context of the current study, attitude is defined as the learner's desire to respond favorably, neutrally or unfavorably to the use of digital resources for learning vocabulary in English. Although researchers and developers may have a positive attitude towards the use of digital tools in learning, it is interesting to know to what extent this interest is also shared by the learners themselves and whether learners feel or not motivated by the opportunities offered by mobile technologies. In this context, Rogers (1962), in his work on the diffusion and adoption of innovations, explained that people bring different degrees of motivation when it comes to embracing new technologies. Also Stockwell (2013) points out that there are two kinds of motivation which explain why learners may engage or not with a certain technology. Stockwell (2013) asserts that learners may have a particular interest in technology, determining them to discover its benefits for language learning strengthening thus their language learning motivation and secondly, learners may have a strong motivation for language learning, which is likely to prompt their interest in the technology which may support their language learning. Therefore learners are likely to have different approaches when it comes to the use of technology for language learning.

As Ushioda (2013) points out, learners have not only different reasons for using technology in learning, but also different reasons for learning a language. Learners' degree of motivation in learning a language reflects the priority they give to language learning in relation to other activities. In this context Rosell-Aguilar (2013) observes that leisure-time users of iTunes U language resources[2] have an intrinsic motivation. Also learners' motivation can be driven by external factors, such as the need to complete a course for instance. Ushioda (2013) identifies some limitations which may account for unfavorable attitudes towards the use of digital tools in learning. Accordingly, students may view their smartphones as 'personal territory' and they may want to keep them separate from their 'studying space', which is also supported by Stockwell (2008). Accordingly, the power of mobile technologies to motivate learners is rather limited, which may also determine their attitudes as to the use of mobile technologies, given the fact that attitude and motivation are interrelated (Rúa, 2006).

Also, although learners have access to mobile technologies, it is very likely that they do not engage with them as long as there isn't any culture associated with the use of mobile technologies in learning at a more local or global level (Ushioda, 2013). Ushioda (2013) indicates that although there are students who may feel motivated in using mobile technologies, their engagement is rather superficial or casual. This superficiality may be due to the pedagogic features of these tools, such as packaging the learning content in small bits

[2] https://freelanguage.org/learn/new-itunes-u-download-educational-podcast-courses-to-learn-language-with-audio-and-video-on-your-ipod-for-mobile-learning

and the fact that the tasks do not necessarily involve deep cognitive processing. On the other side, Lys (2013) reported that the opportunities offered by mobile technology improve students' feelings of confidence. Kim et al. (2013) consider that mobile technologies have the potential to engage learners' emotions and feelings in a rather positive way.

3.9. Summary of the chapter

In the current chapter I presented and discussed theoretical issues related to language learning strategies and vocabulary learning strategies in particular. Secondly I discussed the results of studies investigating the same variables as the current study, 1) age, 2) gender, 3) academic profile; 4) language program.

I also reviewed the explicit and incidental learning opportunities offered by CALL and MALL highlighting the evolution of the opportunities offered by CALL and MALL. I also included a section on learners' attitudes to language learning with digital tools. The available literature reviewed here indicated that learners generally react differently to mobile technologies and also that they are likely to adopt it for learning purposes at different speeds just as they did with computers (Stockwell, 2007).

The gaps I identified in the literature refer to aspects showing how students make use of mobile and computer technology to learn vocabulary and the way they perceive technology for vocabulary learning.

CHAPTER 4
METHODOLOGY

This chapter presents the theoretical background of the methodological decisions I made as to the research design, data collection, data analysis as well as theoretical justifications in support of the design. The chapter focuses on the following sections: research framework, research questions, research design and theoretical justification, research methods and theoretical justification, research procedures, validity, reliability and ethical dimensions of the study.

4.1. Research framework

This study aims to investigate the vocabulary learning strategies Romanian high school students use in a digital context, the extent to which they make use of digital tools for learning vocabulary and students' perceptions as to the possibilities offered by technology to learn English vocabulary.

The main purpose of carrying out a related literature review on vocabulary learning strategies and the integration of technology enhanced tools in the teaching and learning of vocabulary was to find evidence that would help me develop a theoretical framework, positioning the present investigation both in the context of influential past research on vocabulary learning strategies, but also in the current digital context.

Therefore, the current study firstly looks into how the independent variables which are students' age, gender, academic profile (humanities, science, math-ICT, economic-technical) and students' language program (intensive English, bilingual English or regular) separately determine one dependent variable-the vocabulary learning strategies of Romanian students in a digital context. The study explores students' use of digital tools for vocabulary learning and their attitudes to the use of technology in their learning.

Figure 1 shows the potential relationship between the four independent variables and the dependent variable-the vocabulary learning strategies used by Romanian students in a digital context.

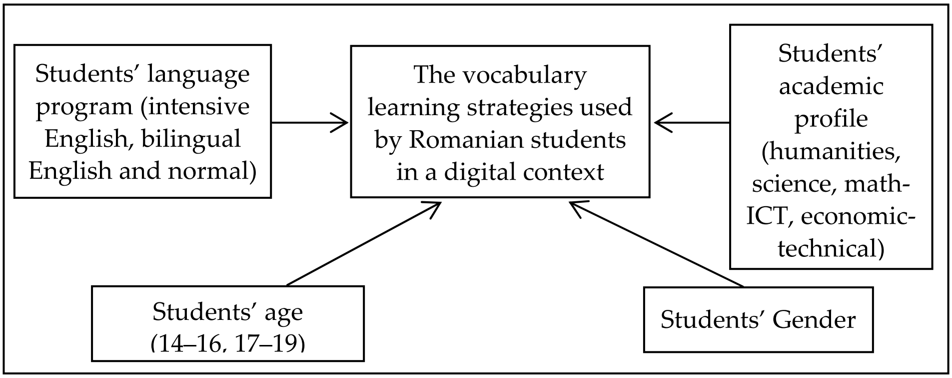


Figure 1: The independent variables

4.2. Research design and theoretical justification

4.2.1. Research paradigm: Pragmatism

The present study situates in a pragmatic research paradigm which called for a mixed-methods approach. Within the context of the paradigms debate, pragmatism appeared to be the third

philosophical system standing as a partner for the mixed methods approach, therefore taking features from both the interpretive and post positivistic approach (Creswell, 2008, Johnson and Onwuegbuzie, 2004). Accordingly, pragmatism emerged as a response to the debate around the 'paradigm wars', rejecting thus a forced choice between constructivism and post positivism (Creswell, 2008).

From an epistemological perspective, pragmatism means more than choosing the methods that best suit the objectives of the study, it also implies on the part of the researcher the assumption that subjectivity and objectivity are not in contrast (Teddlie and Tashakkory, 2009). Rather, the distinction between subjectivity and objectivity depends on the type of research questions. Therefore some research questions would normally require a more objective answer whereas others would allow for a more subjective socially constructed answer. This entails that from a pragmatic view, both subjective and objective perspectives are included without favoring one or the other in particular.

From an ontological perspective, pragmatists approve of the existence of an external reality (Cherryholmes, cited in Teddlie and Tashakkori, 2009). However, pragmatists believe that truth regarding reality cannot be determined. In this context, Howe (1988) attempts to explain the pragmatists' assumptions regarding truth and states that for pragmatists, "truth is what works" (Howe, 1988, p.14). Therefore, truth as perceived by pragmatists is explained through multiple view points, which require alternative interpretations.

From an axiological perspective, although values are important in research, pragmatists do not consider that they should be particularly bothered by them (Teddlie and Tashakkori, 2009). Pragmatists

would study a topic that is meaningful within the researchers' personal value system but also likely to bring about interesting outcomes.

Johnson and Onwuegbuzie (2004, p.17) also attempted to present their position as to the philosophy behind mixed methods research and stated that pragmatism offers "a practical and outcome-oriented method of inquiry that is based on action and leads, iteratively, to further action and the elimination of doubt and it offers a method for selecting methodological mixes that can help researchers better answer many of their research questions." Creswell (2008) explains that in pragmatic research, a focus on the results of the study enhances the choice of methods that would best respond to the research aims in a given context. Therefore the focus on the practical implications of the study is implied by pragmatism (Creswell, 2007, Rocco et al., 2003, Tashakkori and Teddlie, 1998).

As far as I am concerned, I am very inclined to adopt this philosophical stance as it suits with both my role as a practitioner interested in the practical side of the research project, but also with the aims of the research project. Also, as a researcher I value both subjectivity and objectivity equally. I believe, just as Mertens does (2003), that it is important for researchers to be present in the community where the study takes place in order to better understand the subjective experiences of the participants. On the other hand, I also believe that objectivity is likely to provide a balanced view of a phenomenon and prevents bias because of lack of understanding of key viewpoints (Mertens, 2003). Also, from an ontological perspective, I believe that the understanding of truth is also context related,

therefore I am aware that certain results can be generalizable only in the socio-cultural context of the research study.

Therefore, considering my position as both a researcher and a teacher in the community where the study takes place, I believe that the current investigation ought to be positioned within pragmatism – a philosophical framework for mixed methods research.

4.2.2. Research approach: mixed methods

Mixed methods research is in accordance with its pragmatic foundation which means that "the mixing process is centered around the purpose of the investigation" (Dörnyei, 2007, p. 167). Dörnyei (2007, p. 163) defined a mixed method study as one that involves the "collection or analysis of both quantitative and qualitative data in a single study with some attempts to integrate the two approaches at one or more stages of the research process". This definition implies the mixing of paradigm characteristics (Johnson and Christensen, 2004) in a research project in order to provide a better understanding of the research problem (Dörnyei, 2007). However, according to Sandelowski (2003 cited in Dörnyei, 2007), there are at least two reasons for using mixed methods. Firstly, in order to better understand a phenomenon and secondly to check one set of findings against the other. As far as the first purpose is concerned, Greene, Caracelli and Graham (1989) listed four functions by which mixed methods research could provide a more comprehensive picture of a problem: complementarity, which entails a clarification of results from one method to another, development (the results of one method inform the development of the second), initiation (divergent results may generate new perspectives of the research), expansion (of either

the qualitative or the quantitative method through the components of the other). As to the second purpose of using mixed methods, Dörnyei (2007) points out that it refers to the validation of one's findings by showing converging results collected through different research methods. Likewise, applying multiple perspectives on a phenomenon using different data sources enhances research validity (Dörnyei, 2007).

In contrast, different authors (Denzin, 2006; Sale, Lohfeld and Brazil, 2002; Smith and Hodkinson, 2005; Tashakkori and Teddlie, 1998; Giddings, 2006; Yin, 2006) identified various critiques of mixed methods which include: the incompatibility of mixing paradigms, the fact that quantitative and qualitative methods study different phenomena with different methods, mixed methods are also claimed to implicitly leave the qualitative methods in an inferior position. Authors such as McMillan and Schumacher (2006) identified as well the disadvantages of using mixed methods research. Accordingly, they listed the need of the researcher to be competent user of both quantitative and qualitative methods, secondly they mentioned the extensive data collection needed to undertake such a study, thirdly, they also stated that it is likely that some researchers mix methods superficially.

Nevertheless, I believe that a strong rationale for mixing methods in a research study could overcome some of the drawbacks associated with mixed methods research. Likewise, Miles and Huberman (1994, p.41), pointed out that "the question, then, is not whether the two sorts of data and associated methods can be linked during study design, but whether it should be done, how it will be done, and for what purposes."

Therefore, I chose a mixed methods design for two main reasons. Firstly, I wanted to achieve triangulation by combining two sources of data to study the same phenomenon so as to understand it in depth (Denzin, 1970). Considering learning and the complex behavior of learners from more perspectives would give a more accurate illustration of the matter which is in line with various authors who favored a combination of methods in educational research (e.g. Gorand and Taylor, 2004, Mertens, 2009, Rocco et al, 2003). Secondly, I wanted my project to gain complementary strengths and to overcome the potential weaknesses of a single design. As to the complementary strengths, the results from focus groups would help me to determine potential variables which I might not consider otherwise, contributing to the design of the questionnaire items.

A single design would not allow me to corroborate the data, to understand and explicate certain results from the quantitative data. Moreover, I believe that the complementary features of this design would strengthen the inferences in the discussion chapter producing thus a more complete image of the phenomena investigated.

4.2.3. Research strategy: sequential exploratory

Denzin (1970) distinguished between four different types of triangulation: data triangulation (collecting data at different times and in different social situations as well as on different people); investigator triangulation (the use of more than one researcher); theoretical triangulation (the use of several theories in support of the research framework); methodological triangulation (the use of different research methods). Therefore, methodological triangulation in social sciences implies the mix of various research methods while

studying the same phenomenon with the purpose of increasing the validity and understanding (Teddlie and Tashakkory, 2009, Patton, 2002, Creswell, 2008).

The current study uses methodological triangulation, which was defined by Patton (2002, p. 247) as "the use of multiple methods to study a single problem". This research strategy can be represented as QUAL→QUAN, which, as Dörnyei (2007) points out, is a recommended procedure for designing a questionnaire involving a small-scale exploratory qualitative study first. This design is usually conducted in two phases and it is characterized by an initial phase of qualitative data collection and analysis, which is followed by a phase of quantitative data collection and analysis. The findings of both phases are then integrated.

Exploratory designs are suitable when collecting qualitative data about a particular phenomenon and then quantitative data in order to test the qualitative data (Clark et al., 2008). From this perspective, the focus is firstly on the qualitative component of the research as the researcher tries to understand a phenomenon by looking at the common themes under analysis. Within this design, the quantitative data is linked with the qualitative data in the data analysis stage.

Accordingly, this design is appropriate for the current study as it enables me to expand on the qualitative findings, to explore a phenomenon in more depth and investigate the distribution of this phenomenon across the population under study and also to test elements of a potential theory stemming from the qualitative findings (Creswell, 2008, Morse, 1991).The study is characterized by a sequential mixed-methods cross-sectional research design with the purpose to offer a broad illustration of a phenomenon in one

specific research context and at a certain point in time (Dörnyei, 2007, Cohen et al., 2007, Bryman, 2008).

4.3. Research methods

The two methods I decided to combine in my project are: the focus group interviews and the self-reported questionnaire. Below is a description of these methods along with a theoretical justification for their use.

4.3.1. The focus group interview

According to researchers (Lewis, 1995; Gibbs, 1997; Marczak and Sewell, 1998) a focus group is defined as a gathering of individuals who have common characteristics, brought together by a moderator whose purpose is to get information about a certain problem. Accordingly, the aim of a focus group is firstly to create an enjoyable atmosphere which would enable the participants to share their thoughts about a topic (Kruger and Casey, 2000). This method pays attention to the individual voices, capturing students' experiences as to the topic under discussion allowing the researcher to present a more extensive view of the phenomenon investigated (Schratz, 1993; Hoepfl, 1997).

Johnson and Turner (2003) considered focus group discussions as a distinct data collection strategy. Likewise Morgan and Spanish (1984) described the focus group as both an interview and an observational technique. They believed that the strengths of the focus group are the result from a compromise between the strengths found in other qualitative methods (Morgan and Spanish, 1984).

Similar to participant observation, focus group interviews would allow access to interaction between participants. Also, similar to in-depth interviews, focus group interviews allow direct access to content, reflecting various attitudes and experiences of the participants. Thus they consider that a main characteristic of the focus group interview is the possibility to observe the interactions between participants.

Krueger and Casey (cited in Teddlie and Tashakkori, 2009, p. 228) also defined the focus group discussions as "a carefully planned series of discussions designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment". They also suggested that the focus groups should have the following characteristics (cited in Teddlie and Tashakkori, 2009, p. 228):

- A size of 5 to 10 participants is best;
- The group composition should be homogeneous;
- Procedures should involve a group interview conducted by a moderator who is often accompanied by an assistant;
- Group sessions do not last more than two hours;
- Sessions involve a focused discussion of a topic of interest.

One of the main features of the focus group interviews is that it focuses on several individuals at the same time running thus on group dynamics. This method, unlike the in-depth interview, can simultaneously offer multiple perspectives on a topic and allow one participant's comment to feed off another comment exploring thus the topic in more depth. As Catterall and Maclaran (1997) suggest, a group dynamic generates a high level of spontaneity and stimulation as within a group discussion, one thought may generate other ideas

and thus ideas may gradually develop from connected comments related to the specific situation under discussion.

Accordingly, the main rationale for using focus group interviews was to gain more insight into the students' use of VLS, to perceive any learning behavior I have not thought of and use that information in the item design of the questionnaire. Another reason in favor of this method is its potential to investigate the students' perceptions and attitudes as to the use/non-use of technology-enhanced tools in their learning of vocabulary. Although this aspect can be investigated through the questionnaire method as well, the focus group might generate richer data and more angles to explore as far as attitudes and perceptions are concerned.

As far as the drawbacks of this method, in the case of the current research, one possible drawback of the focus group discussion is that participants might behave differently in a group setting from how they would normally behave when not being observed. Another risk to consider involves the potential cross-talk, which might make transcription more difficult. Also, there is the risk that the discussion may be dominated by one or two participants.

However, I believe that I am able to minimize as much as possible such limitations. Reducing cross-talk can be achieved by explaining the ground rules of the focus group to the participants. In case these are forgotten during the discussion, the participants will be constantly reminded of them. The participants' behavior might remain the same as I will personally moderate the discussion, and no other external person will be there to observe. Also, I will elicit answers from all participants in the focus group so as not to have the discussion dominated by one or two participants.

4.3.2. The questionnaire

The questionnaire is an effective tool for factual, behavioral and attitudinal data from large groups of participants while also providing background information (Dörnyei, 2003). As Dörnyei (2003) points out, behavioral questions are used to find out what participants do or did in the past and the most common questions of this type in L2 research are the items in language learning strategies inventories which ask about the frequency of use of a certain strategy. However, questionnaires could provide data not only about behavior but also about attitudes and beliefs, which would give evaluative responses as to what participants think (Dörnyei, 2003). One of the main advantages for using this method is its efficacy in terms of researcher time, researcher effort and also financial resources (Dörnyei, 2003). Moreover, administering a questionnaire to a large group of participants is necessary to obtain generalizable study results.

In contrast, researchers also (Bryman, 2008, Dörnyei, 2003) observed several disadvantages of using this method. Bryman (2008) considers that questionnaires are not exploratory in nature, moreover according to Oppenheim (1992), there is the risk that participants give superficial answers or skip questions, in case these questions are rather long and difficult to follow. Likewise, one of the main problems with questionnaires but also with qualitative methods is the fact that the participants may not provide true answers about themselves, but rather their answers may reflect what they think they are supposed to do (Dörnyei, 2003). The self-deception (the participants deceive themselves in their answers, not only the re-

searcher), the halo effect (impression formed in one question carries into the next one), the fatigue effect (related to the length of the questionnaire) and also the acquiescence bias (the tendency to agree with sentences when one's position is uncertain) are other shortcomings related to the use of this method (Dörnyei, 2003). While acknowledging the limitations of this method, I also believe that the issues previously mentioned can be successfully addressed through a careful design of the questionnaire.

4.3.3. Combining the focus group and the questionnaire

Having described the advantages and limitations of the above methods chosen to collect data for the present investigation, I consider that a combination of the focus group method and the self-reported questionnaires is the optimal choice to achieve the aims of the current project.

Combining the questionnaire method with another method is likely to enrich the questionnaire data and also to accommodate both the strengths and weaknesses of each method (Dörnyei (2003). I consider that my choice of methods is justified by the belief that each method complements one another in a unified research design which is likely to enhance the quality of the emerging analysis of results.

The methods for integrating the data in the current study include the following:

- selecting the participants for the QUAL phase from those who would participate in the QUAN phase;
- developing QUAN questionnaire items also from results collected during the QUAL phase;

- including open ended questions in the QUAN questionnaire;
- integrating the QUAL and QUAN results in the Results chapter;

4.4. Romanian schools and sampling procedures

The target population is Romanian students enrolled in upper secondary school education, learning English as a foreign language. In Romania, high school studies comprise four years and there are several types of high schools, the most common is the theoretical high school. The theoretical high schools usually have three types of academic profiles, such as science, math-ICT and humanities. These academic profiles may offer different foreign language programs, such as bilingual, intensive English or regular, according to the school policy. The study language can be either Romanian or German, which is the case of a single high school, where students study in German. Nine high schools were selected through geographical cluster sampling (Teddlie and Tashakkori, 2009) from three different cities in Romania. Seven high schools are located in Cluj-Napoca, a city in north-west Romania, one high school is in Câmpia Turzii, a small town near Cluj-Napoca and one is a private high school located in Bucharest, the capital city. According to Teddlie and Tashakkori (2009, p. 173), cluster sampling represents a probability sampling technique within which the researcher randomly selects clusters that "occur naturally in the population" (e.g. schools). The criteria used for selecting these clusters were the diversity of academic profiles and language programs (see table 5), which also represent two independent variables in the current study. Within the schools, the classes were randomly selected by the

teachers who administered the questionnaire, ensuring a balanced distribution of academic profiles, language programs and age (14–16, 17–19 years old).

Therefore, in order to collect quantitative data, cluster sampling was combined with random sampling. For the qualitative data, cluster sampling was combined with convenience volunteer sampling, which implied that students enrolled in the same high schools from which the quantitative data were collected, volunteered to participate in the focus group discussions.

To sum up, the current study used a QUAL →QUAN sequential mixed-methods sampling strategy (Teddlie and Tashakkori, 2009) which consisted of a volunteer qualitative sample (43 students in five focus groups, from 5 high schools) and a cluster geographical quantitative sample (1,239 students in 9 high schools).

4.4.1. The qualitative sample

Although there were nine schools participating in the study, two of them were from different towns, being less manageable to organize focus groups there. Initially, I planned to collect the quantitative data from five schools in Cluj-Napoca. However, during the quantitative phase, given the fact that I would not receive as many questionnaires as I initially expected, I decided to add two more schools. Since the focus group discussions were planned and conducted before the quantitative data collection phase, I only conducted focus group discussions in the five schools I initially selected.

Each focus group had a number of students ranging from 7 to 10 participants. Therefore 43 students participated in the qualitative phase of the present investigation. Tables 3 and 4 indicate the com-

position of focus groups, firstly across academic profiles and secondly across grades. Since participation in the focus groups was voluntary, the composition of focus groups was mixed, with participants from different grades, academic profiles and language programs enabling a wider range of ideas to be expressed.

Table 3: The composition of focus groups-distribution across academic profiles

School	No of participants	Humanities	Science	Math-ICT
A	8	2	4	2
B	8	2	2	4
C	10	6	-	4
D	7	3	3	1
E	10	4	-	6

Table 4: The composition of focus groups-distribution across grades

School	No of participants	Grade 9	Grade 10	Grade 11	Grade 12
A	8	3	2	2	1
B	8	2	2	4	-
C	10	3	3	-	4
D	7	3	3	-	1
E	10	-	3	5	2

4.4.2. The quantitative sample

According to a report from the Ministry of Education (2011), there were 492,920 teenagers enrolled in urban upper secondary education in the 2010–2011 academic year. I calculated the sample size of my research sample using the information given by Cohen et al. (2007), who claimed that a conventional sampling strategy is

to use a 95% confidence level and a 3% margin of error. The sample size for students was calculated based on Yamane's formula (Yamane, 1967, p.258), where n = sample size, N = the size of population, e = the error of 3 percentage points:

$$n = \frac{N}{1 + Ne^2}$$

By using Yamane's (1967) formula of sample size with an error of 3% and with a confidence coefficient of 95% (Cohen et al., 2007) for my student population (492,920), this meant a sample of 1,108 participants.

Although the minimum sample size for a study whose results are to be generalizable across the whole population of Romanian high students was 1,108 participants, I targeted a larger sample. The quantitative sample of the current study was N=1,239, of whom 744 participants were female and 495 participants were male. The mean age for the entire sample was 16.46.

Table 5: Schools' profiles[3]

School	Classes per level	No of students per class	Humanties No of classes	Science No of classes	Math-ict No of classes	Economic-technical
A	4	28	-	2 – intensive English	2 – regular foreign language instruction	-
B	3	28	1 – intensive English	1 – intensive English	1 – regular foreign language instruction	-
C	4	28	3–bilingual English		1–intesive English	-

[3] The data provided in this table are taken from the schools' web pages.

School	Classes per level	No of students per class	Humanties No of classes	Science No of classes	Math-ict No of classes	Economic-technical
D	2	28	1–regular foreign language instruction		1–regular foreign language instruction	-
E	3	28	-	2–regular foreign language instruction	1 + intensive English	-
F	4	28	1–intensive English	2–intensive English	1–regular foreign language instruction	-
G	5	28	-	-	-	5–regular foreign language instruction
H	4	28	-	-	-	3–regular foreign language instruction 1-intensive English
I	3	20	1–regular foreign language instruction	1–regular foreign language instruction	1–regular foreign language instruction	-

4.5. Instruments

4.5.1. The focus group interview guide

The focus group discussions were conducted using a semi-structured guide. The focus group interview questions were aimed at investigating the students' vocabulary learning strategies, at giving them the opportunity to talk about the way learning of

vocabulary occurs at that particular stage in their lives, but also at probing for possible questionnaire questions. The focus group interview covered the subject of vocabulary learning strategies in a digital context and it was mostly shaped as a conversation between the researcher and the participants. Given the fact that focus group discussions mostly reflect qualitative techniques such as participant observation and interviewing and that the focus group questions are usually open-ended, the following structure of the discussion was preferred (Please see Appendix A for the full focus group interview guide).

- Introductions: initial remarks, introducing the topic of discussion, establishing ground rules of the focus group interview;
- Global settling questions: their general attitudes towards learning English vocabulary;
- First set of questions: the sources of new vocabulary and the way they deal with it in terms of strategies;
- Second set of questions: the implications of technology in their learning of EFL vocabulary;
- Final remarks: students' learning of vocabulary-with or without technology; exploring the reasons which facilitated their learning of English vocabulary in a digital context; thanking participants and concluding.

Prior to conducting the focus group interviews, I discussed the focus group questions with another colleague of mine who advised on the wording of questions. As a result, I decided to include more prompts to each question in order for the questions to be as clear as possible. Given the fact that I was the moderator of the discussion I could also clarify any potential misunderstandings. I also conducted

two full pilot focus group discussions in two of the schools participating in the study. During these discussions I had the opportunity to familiarize myself with the method but also to test out the questions on two groups of students similar to those I had in the main study.

4.5.2. The Vocabulary Learning Strategies Questionnaire

I collected the quantitative data with an instrument designed to meet the purposes of the current investigation. The final version of the VLSQ included 3 main scales. The first main scale (VLS) contains the items from Schmitt's (1997) VLSQ. The only strategy I did not include in this scale was the one related to physical action when learning a word as I believe it is a strategy teachers use with younger learners. Also, I added an important memory strategy after the focus group discussions, the item, *If the word has an impact on me, I retain its meaning*. The VLS scale included the following subscales: determination, memory, metacognitive, cognitive and social strategies. I chose to use Schmitt's (1997) questionnaire as according to Catalan (2003), it elicits answers easily and it is suitable for participants of various background and ages.

The second scale, the 'digital vocabulary learning strategies' scale was based on my own understanding of the digital tools students may use for vocabulary learning and on the available literature on MALL and CALL. This scale also includes subscales of strategies which I grouped in determination, memory, metacognitive-cognitive and social strategies.

The third main scale is the 'attitudes' scale and it includes items which I wrote, based on my understanding of the qualitative

data as students clearly expressed various attitudes towards the use of digital tools for vocabulary learning during the focus group discussions.

The pilot version of the Vocabulary Learning Strategies Questionnaire in a digital context consisted of 87 items structured into 5 main sections, biodata and background information. Prior to piloting, I received valuable feedback on the wording and layout of the questionnaire from another doctoral colleague. The pilot version of the questionnaire included an additional column, where the participants were asked to check the box if the question was unclear to them. Also at the end of the pilot questionnaire, I have included four questions related to the length of the questionnaire, the length of time necessary to complete the questionnaire, the difficulty of the questions and terminology. The questionnaire was piloted with a very similar sample from a school in a different town. The pilot questionnaire was administered by the English language teachers after the head teacher consented. The pilot questionnaire was completed by 60 students from all grades (9–12). Following the analysis of the results, I eliminated the items referring to sources of vocabulary learning as I received information related to that aspect from the focus group discussions as well. I also re-grouped all the questionnaire items according to the type of vocabulary learning strategy they each represent as I anticipated interpretation difficulties.

I eliminated one item which was marked as unclear by the participants and one open ended question, I also rephrased a few other items. The feedback questions uncovered that the students understood the questions, that the terminology used was clear and

that the average length of time for completion was between 15 and 25 minutes. The final version of the questionnaire (see Appendix B for the English version of the questionnaire and Appendix C for the Romanian version) is four pages long, which is in accordance with Dörnyei (2008). This version consists of 85 items structured into 3 main scales, biodata and background information. The items were measured through Likert scales with 5 choices. Table 6 indicates the scales and subscales of the questionnaire with item examples as well as the reliability analyses for each of the main scales and subscales. The results of the reliability analyses for each of the three main scales in the questionnaire indicate that they all had high reliability (Field, 2009). Likewise, the results of the reliability analysis for each of the subscales in the questionnaire show acceptable reliability.

The questionnaire is a Mixed Methods one (QUEST-MM) and it includes both closed-ended and open-ended items as well as comment columns, which allowed the participants to add other aspects not covered in the questions. The comment columns and the open-ended questions gave the participants greater freedom of expression and as Dörnyei (2003, p.47) pointed out, ”sometimes we need open-ended items for the simple reason that we do not know the range of possible answers”.

The thematic analysis of the open ended questions of the questionnaire was embedded in the thematic analysis of the focus group data, being treated as qualitative data.

Table 6: Questionnaire with scales, subscales, item examples and reliability analysis

Scale	Cronbach's α	Subscale with the number of items	Cronbach's α	Examples of items
Vocabulary Learning Strategies (55 items)	.91	Determination strategies (9)	.61	*I look up the word in an English-Romanian dictionary.*
		Social strategies (6)	.61	*I ask the teacher for the meaning of the word.*
		Memory strategies (28)	.86	*I associate the word with a familiar place.*
		Cognitive strategies (7)	.74	*I write the new word in a vocabulary notebook.*
		Metacognitive strategies (5)	.74	*I do vocabulary exercises.*
		Open ended question		*My useful strategies for remembering the new words are:*
Digital tools for vocabulary learning (28 items)	.87	Determination strategies (11)	.75	*I search new words in an online dictionary on my phone.*
		Social strategies (6)	.69	*I learn new words in English when using social networking (Facebook, Twitter etc.).*
		Memory strategies (5)	.61	*I save new words in a list on my phone.*
		Metacognitive–Cognitive strategies (6)	.70	*I do vocabulary exercises on various webpages on the Internet.*
		Open ended question		*My favorite apps or computer assisted vocabulary programs are:*
Attitudes to vocabulary learning with digital tools (14 items)	.77			*I would like to be trained to use apps and other technology resources for vocabulary learning.*

The biodata and background information section collected information about the participants' grade, academic profile, age, gender, number of English lessons per week, number of years he/she has been studying English, the language program she/he follows at school (intensive English, bilingual or normal), information about any language test they have passed (FCE, CAE, CPE, IELTS etc.), information about the other foreign language they have been studying, as well as information about their mother tongue.

The items in the VLS scale are based on Schmitt's (1997) taxonomy of vocabulary learning strategies. As a result of the focus group discussions, I only added the item *If the word has an impact on me, I retain its meaning* to the VLS scale of the questionnaire.

The focus group discussions contributed more to the design of the items in the digital vocabulary learning strategies scale and also to the design of the items in the attitude scale.

Accordingly, the item *My favorite apps/computer assisted vocabulary programs/online games from which I've been learning words in English are,* was based on students' variety of answers in the focus groups as several students mentioned different games, apps they use.

Likewise, the item *I watch/listen to tutorials/presentations/talks/ podcasts/ radio on subjects that I am interested in,* also represents an item based on students' answers to the focus group question, *How do you usually encounter new words in English.* Also, the item, *I chat in English (even with Romanian speakers) when I am online* is based on students' answers in the focus groups to the question, *Do you use new words in conversations?.*

The items, *I learn new words while browsing different webpages on the Internet* and *I learn new words in English when using social networking*

(Facebook, Twitter etc.) are based on students' answers' to the question in the focus group, *Where do you usually encounter new words?.*

The scale digital vocabulary learning strategies has thus been entirely designed by myself, based on some of the students' answers in the focus group discussions as detailed above but also on my apprehension as to the use of these tools by students in order to measure the extent to which students use technology enhanced tools for vocabulary learning. The items report on the learning of vocabulary with technology enhanced tools. The two open questions aim at exploring students' awareness as to potential apps and computer assisted vocabulary programs they have used. Apart from adding more originality to my data collection instrument, this set of questions aims at portraying a more updated vocabulary learning behavior in the digital age.

In the attitudes scale the participants had to rate how strongly they agree or disagree with the statements. As the previous set, these items have been designed by myself, based on the results from the qualitative data and from my own observations as to students' attitudes towards the use of technology in their learning.

The answers to the questions related to students' attitudes towards using digital tools for vocabulary learning in the focus groups (*What is your opinion as to vocabulary learning with technology? What do you mostly like about it? What do you dislike about it?),* enabled me to design the following items in the questionnaire*: I would like to be trained to use apps and other technology resources for vocabulary learning; I would like to use my own devices (smartphone, iPad, tablet) for language tasks in the classroom; Apps and computer assisted vocabulary learning programs are a source of entertainment, not learning; I would like to*

know more about the opportunities that technology provides for vocabulary learning; Learning English vocabulary with technology depends on the type of person you are and on your learning style; Many apps and computer assisted vocabulary learning programs are too easy and boring. These items are entirely derived from students' comments in the focus groups as to their attitude to the use of technology in language learning.

4.6. Data collection procedures

I personally contacted the schools and after obtaining the head teachers' written permission to conduct the study, I contacted the English teachers from each of the nine schools via email in order to present my study and to establish together organizational details. I visited the schools and met the English teachers in order to give more details about the aims and procedures of the project and data collection phases.

4.6.1. The focus group interviews

I organized five focus groups in the participant schools. The focus group participants were selected on a voluntary basis by the English teacher in each school. The focus group interviews took place in April 2014, during 'Școala Altfel', when students come to school but they are only involved in extracurricular activities. Accordingly, students were very relaxed and they did not need to allocate their free time to participate in the focus group discussions. Each focus group interview lasted approximately 60 minutes, being digitally recorded by myself after the participants' oral consent was obtained. The focus group interviews were in Romanian. They were

recorded and transcribed by myself. I conducted the focus group discussions in a quiet room, the discussions were never interrupted by other external factors. The decision to moderate the group was based on the fact that I was directly involved in the project and research context (Millward 1995). I also did not need an assistant as I had the support of the English teacher in each of the schools for anything I might need.

4.6.2. The administration of the questionnaire

The second phase of the data collection involved the parallel administration of the vocabulary learning strategies questionnaire, in nine schools, and took place from May to June 2014, during regular teaching time. The questionnaire was administered by the English teachers of the schools that agreed to take part in the study. The teachers were clearly explained the procedures and purposes of the study. As to the schools which were from different towns, I sent the questionnaires by mail and received them by mail as well. I visited the research sites when I personally delivered the questionnaires and when I collected them back. During this time I constantly stayed in touch with the English teachers in those schools. The students were given information about the aims of the project, they were told that the questionnaire is anonymous and that the results would only going to be used for research purposes. The students were also given the choice to refuse to fill in the questionnaire. The questionnaire administration took between 15 and 25 minutes. Given the fact that the questionnaire was first piloted with another group of students and that the questions were in Romanian, any possible misunderstandings have been eliminated.

The teachers administering the questionnaire did not encounter any difficulties during the process and reported that the questions were clear enough for all the students. The teachers read the questionnaire before administering it but they did not notice any inaccuracies.

Table 7 shows the distribution of the questionnaires and the return rate. The return rate is 89%.

Table 7: The distribution of questionnaires across the nine research sites

School	No of questionnaires sent	No of questionnaires returned
A	250	228
B	180	154
C	150	125
D	200	172
E	150	124
F	80	73
G	240	230
H	50	46
I	90	87
Total	1390	1239

4.7. Data analysis procedures

Following a QUAL→QUAN sequential mixed-methods design (Teddlie and Tashakkori, 2009), which applies to studies in which a QUAL phase occurs first, followed by a QUAN phase, the data collection process consisted of two phases in 2014. The qualitative

phase took place in April 2014 whereas the quantitative phase took place from May to the end of June 2014.

In line with this design, I used focus group interviews in the QUAL phase to examine various aspects regarding students' vocabulary learning in the digital context. I believe this part was necessary as it enabled me to gain an insight into the learners' strategies also through the lens of the attitudes and beliefs they have towards their vocabulary learning behavior. The qualitative data were analyzed thematically whereas the quantitative data were analyzed using descriptive and inferential statistics procedures. The results of the two phases are integrated in the Results chapter.

4.7.1. The focus group interviews

The focus group discussions were in Romanian, they were recorded, transcribed by myself and finally they were translated into English. The data from the focus group discussions were analyzed qualitatively using 'thematic analysis' defined by Braun and Clarke (2006, p.79) as "identifying, analyzing and reporting patterns within the data."

In order to be as accurate as possible about the data, I transcribed each focus group discussion after it finished. Then I assembled the data from the five discussions in one single document by placing the answers to each individual question into categories matching the focus of each question. Within this framework, I kept the categories as close as possible to the raw data. After that, I interpreted the answers students gave to the questions and compared them across different participants in order to be able to spot different ideas. When specific participants are mentioned, I referred to them using

alphabetical letters, followed by their gender, age and the group they were part of in brackets. My thematic analysis was guided by the a priori categories based on the focus group questions, which were as well based on the overall research questions of the study. I used this procedure because I wanted to keep the categories as close as possible to the research questions. The thematic analysis of the participants' statements is embedded in the quantitative results complementing thus the answers to the research questions. As to the analysis of the qualitative data, the way I see the data is determined by my own background, which means that the interpretation I provided may be one of the many possible constructions of reality (Holliday, 2007).

4.7.2. The questionnaire

The software package used in the analysis of quantitative data was SPSS 21[4] (for descriptive and inferential statistics). The coding and analysis of the open ended questions was done qualitatively. Before entering each questionnaire in SPSS, I gave each of them a unique identification code in order to identify questionnaires coming from the same school, which enabled me to quickly find it when needed. Following this procedure, I began the coding process, converting the answers into numerical scores. A coding frame specifying the meaning of the scores for each item was set up. The coding frame for closed-ended items was straightforward, each response being given a number (e.g. never – 1, rarely – 2, sometimes – 3, often – 4, always – 5).

[4] Statistical Package for the Social Sciences, version 21

Quantitative data analyses included the computation of descriptive statistics (means, standard deviation, and frequencies) to compile information about the demographics of the participants and differences in strategy use, digital tool use and attitudes towards learning English with digital tools relative to students' academic profile, gender, language program and age. Statistical analyses also included analysis of variance (ANOVA) in order to determine any variation in strategy use, digital tool use and attitudes towards learning English relative to the groups studied.

The data from the open ended questions of the questionnaire were analyzed thematically together with the data from the focus group discussions, being embedded under the categories emerging from students' comments in the focus groups.

4.8. Measuring data quality

In mixed-methods, the validity of a project is evaluated distinctly for its QUAN and QUAL components since, according to Teddlie and Tashakkori (2009), they are likely to ensure data quality. Therefore as to the QUAN data, I will discuss the principles of validity and reliability whereas for QUAL data, I will show how credibility and trustworthiness are achieved.

4.8.1. Validity and Reliability

In the case of the current study, the reliability of the instrument consists of its internal consistency, which is measured by the Cronbach Alpha coefiecient (Dörnyei, 2003). Therefore in order for the questionnaire to have internal consistency, it must satisfy two

conditions (see Table 6). Firstly, it must have multi-item scale and secondly, the items within each scale must be homogeneous (Dörnyei, 2003). The current study meets both conditions in terms of internal consistency.

Content validity focuses on the degree to which a measurement technique covers most of the aspects of the concept under investigation (Carmines and Zeller, 1991). As far as this project is concerned, I have attempted to include in the questionnaire not only the vocabulary learning strategies which have been identified so far in the literature, but also potential strategies which have not been included in any other VLS questionnaire. Therefore, the questionnaire was grounded in the literature on vocabulary learning strategies, it also included statements related to the use of digital tools for vocabulary learning and statements related to students' attitudes towards vocabulary learning with digital tools. The items I have designed were based on the data I collected from the focus group discussions but also on my own apprehension and use of digital tools in the learning of vocabulary.

Furthermore, researchers (Cohen et al., 2007, Teddlie and Tashakkori, 2009, Dörnyei, 2007) also distinguished between internal and external validity. Dörnyei (2007) asserts that internal and external validity could be indicated if the researcher shows evidence against the following different types of threats to validity: participant mortality (participant dropout rate), the Hawthorne effect (participants performing differently when they know they are studied), practice effect (the improved experience of the participants can be due to its repetition), maturation (physical or mental change with age), the social desirability bias (the participants' will

respond according to that they think it is expected of them to respond), history (unanticipated events during the study). The participant dropout rate is not a threat as in the high schools selected the administration of the questionnaire took place in the classroom during their English lesson, when students are expected to be present. The same stands true for the focus group discussion. Also since each focus group discussion took place only once and the participants do not have prior access to the questions, the practice effect is not applicable. Likewise as it is a cross-sectional study, the data collection phase occurring over a period of approximately three months, the maturation effect is not relevant for the study. As to history, at the beginning of the data collection phase no events have been recorded to influence in any way the research process. Accordingly, only two of the above mentioned threats, the Hawthorne effect and the social desirability bias, are to be taken into account for the current study. As to the Hawthorne effect, given that the questionnaire looks into the participants' behavior and attitudes as to the VLS they use in the current digital context, and it does not assess their achievements, I believe that the Hawthorne effect is highly reduced (Cook, 1962). Likewise, I have attempted to minimize the social desirability bias by carefully designing the questionnaire items, by clearly presenting and introducing the project to the participants and also by clarifying any possible misunderstandings of the questions.

4.8.2. Credibility and trustworthiness

It was Lincoln and Guba (1985) that introduced the concepts of 'trustworthiness' in order to justify the qualitative researchers' claim

for validity. Accordingly, they presented four features which define the concept of 'trustworthiness': credibility (the 'truth value of a study), transferability (the applicability of results in other contexts), dependability (the 'consistency' of the results) and confirmability (the neutrality of the results). As Dörnyei (2007) asserts, these terms have their counterparts in quantitative research as well. Hence, the credibility concept corresponds to the internal validity in quantitative research and it means the extent to which the participants find the results of the study credible. Furthermore, it focuses on a match between the realities represented by the researcher and the realities shaped by the participants. Therefore, I discussed my understanding of the participants' opinions as expressed during the focus group immediately after the discussion has finished. Therefore the participants were allowed to comment on my own perception of their views supporting thus the credibility of the study.

Dependability corresponds to the concept of reliability in quantitative research and it specifies the possibility that the same outcomes would be obtained once again. In order to ensure this, Lincoln and Guba (1985) propose that the researcher should preserve all records and files pertaining to the study so that an auditor could reconstruct how the study was conducted. Therefore this audit trail serves the dependability function and it also enables the researcher to explore other research routes. In order to meet the dependability criterion, I kept all data in organized files.

4.9. Ethical dimensions

Since this research project has as participants young people, it inevitably involved corresponding ethical issues. Therefore I applied the following ethical principles in the questionnaire design, data collection and data analysis stages:

4.9.1. Voluntary participation

I could not have forced any of the schools to participate in the project as the head teachers and English teachers could have simply refused to be involved in any way. Also, teachers who agreed to help me organize the focus group discussions in each of the schools, could have also declined, however they did not. Even though I collected the data in classroom groups, the students were told that they could choose not to participate. As to the focus groups, they were also organized on a voluntary basis, only the students who wanted to participate did so and contacted their English teacher, who set up the group. Also, I relied completely on the teachers' and students' open willingness to take part in this project and I did not offer any material incentives in order to persuade people to participate.

4.9.2. Informed consent

I first informed the head teachers of the schools participating in the current study by email. Then I made an appointment with each head teacher separately and explained the details of the project.

Following the discussion I had with each head teacher, I sent them official letters explaining further details of the project as well as the timetable for the data collection. I also personally contacted the English teachers in these schools and presented my project. Also, I requested the written informed consent of parents whose children have participated in the focus group discussion. I also requested the students' oral consent to digitally record the focus group discussions. The parents' consents of students completing the questionnaire were also requested before proceeding with the administration of the questionnaire. As to the students, they have been given a presentation of the study as well as of their rights as participants in the research study. Therefore, they have been explained the concepts of confidentiality, anonymity, voluntariness and beneficence. I also included these details on the first page of the questionnaire. Only students who agreed to take part in the study, expressing their consent, filled in the questionnaire.

4.9.3. Confidentiality, anonymity, data storage and non-traceability

These basic ethical principles have been taken into account both during the design of the measurement instrument but also during the following stages of the research project. Even though I was familiar with the schools and knew some of the teachers prior to the study, I have never asked for the students' names. The names of students' participating in the focus group discussion were coded in order to ensure anonymity but also non-traceability, which is a very important aspect to take into account especially with recorded data (Dörnyei, 2007). Accordingly, all participants have been

promised anonymity and confidentiality even though neither the focus group discussion nor the questionnaire touched upon sensitive issues which could have had any negative effect on the students' interests or school life. Likewise, the completed questionnaires were not shown to anybody and I personally transcribed the data from the focus group discussions. All data and materials used have been personally stored in a very secure place.

4.9.4. Sensitivity

The study did not involve any sensitive issues or harmful aspects, which could have disturbed the participants in any way. Also in order not to take either students' or teachers' extra time, I organized the focus group discussions during 'Școala Altfel', a week in April, during which students go to school but they do not have any lessons, only extracurricular activities organized by teachers.

CHAPTER 5

QUANTITATIVE AND QUALITATIVE RESULTS

This chapter integrates the quantitative and qualitative results of the present study with the purpose to answer the study's research questions. What follows in this chapter is the analysis of outcomes resulting from both data collection phases.

5.1. Demographic data across the independent variables

The total number of participants in the current study was 1,239. Figure 2 shows how the participants were distributed across the four academic profiles: math-ICT (33%), humanities (23%), science (22%) and economic-technical (22%).

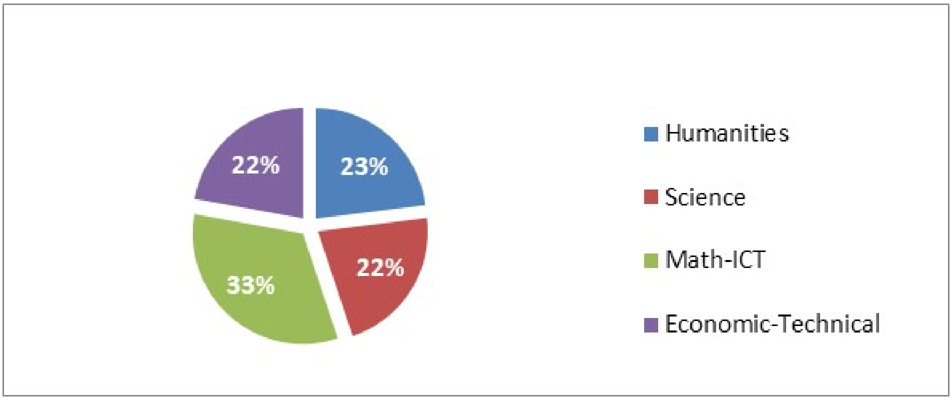


Figure 2: Academic profiles distribution in the study sample

Figure 3 shows the distribution of the participants across the language program they follow at school. 52% of the participants were enrolled in a normal language program, studying on average 2.15 hours of English per week, 38% were enrolled in an intensive program, studying on average 4.01 hours of English per week and 10% were enrolled in a bilingual language program, studying on average 5.75 hours of English per week and at least one subject in English.

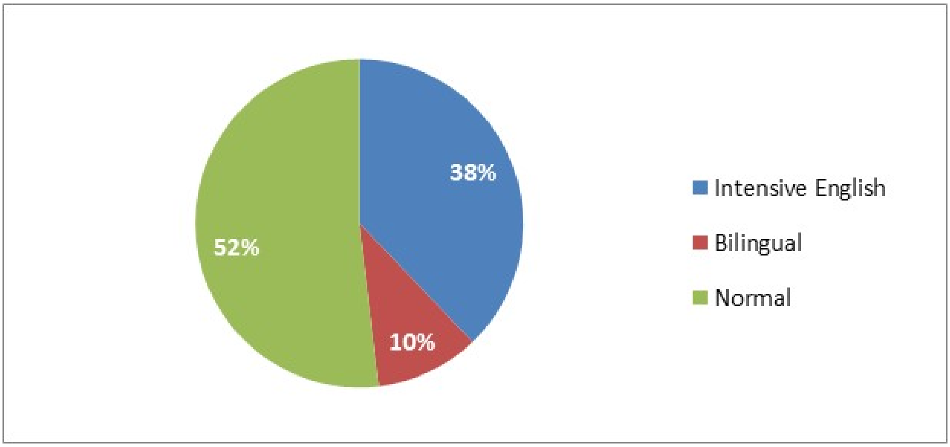


Figure 3: Language program distribution in the study sample

Table 8 shows the means of English language study years for students enrolled in each program and the means of English lessons per week for each language program. Therefore, bilingual students study English more than intensive English students or the students enrolled in a normal program with about a year's difference between them. Also students enrolled in a bilingual program have more English lessons per week than students enrolled in the other two programs.

Table 8: Number of years of studying English
and number of English lessons per week for the study participants

	No. of years of studying English at school		No. of English lessons per week at school	
Language Program	M	SD	M	SD
Intensive English	9.18	1.88	4.01	0.15
Bilingual	9.91	1.62	5.75	0.77
Normal	8.86	2.03	2.15	0.37

Figure 4 indicates the age distribution in the sample: 54% of the students were in the 14–16 years old category and 46% were aged between 17–19 years old.

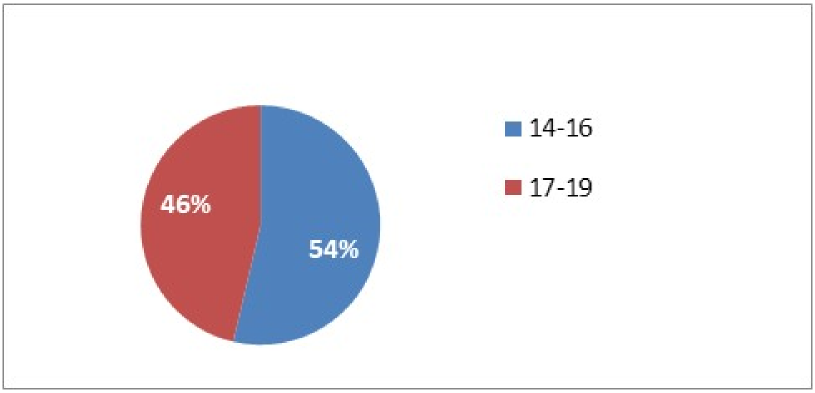


Figure 4: Age distribution in the study sample

Figure 5 shows that 60% of the sample population in the study was female whereas 40% was male. According to the 2011's Census[5], in Cluj county there were 8554 females (57.8%) and 6237 (42.2%)

5 http://www.recensamantromania.ro/rezultate-2/

males, aged between10–14. This gender distribution is similar to the gender distribution in my sample (see Figure 5).

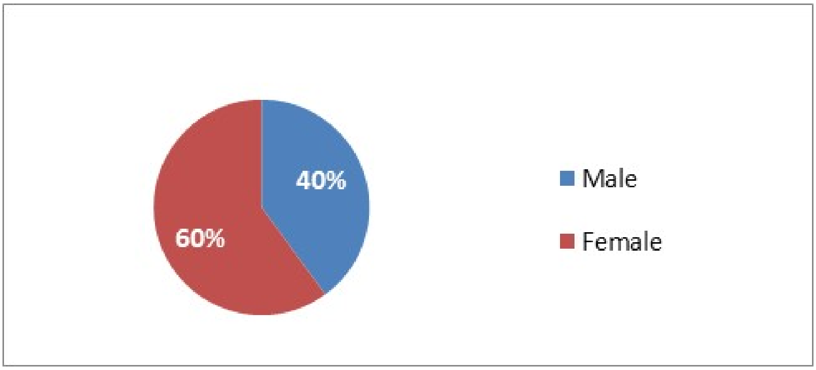


Figure 5: Gender distribution in the study sample

5.2. Overall vocabulary strategy use by Romanian students

5.2.1. Sources for encountering new words

The majority of the participants in the five focus groups identified extensive reading on the Internet (e.g. news, articles, tutorials etc.), watching movies, listening to music and playing online games as the most common ways of encountering new words. Therefore, the digital tools act as delivery content tools enabling learners to come across words in varied contexts. The following quotes illustrate this: *"I mostly encounter new words in the online games I play, in the music I listen to, tutorials, conversations, outside school mostly* "(Participant D, female, 16, school O.G.). Participant A (female, 15, G.C) stated *"I usually learn new words from the Internet"*, while another colleague (male, 15, G.C) added *"I've personally learnt many new*

words from the games I play". In this context, participant B (male, 14, school G.S.) asserted: *"I usually learn new words from articles I am very interested in, which I read online"*, suggesting the importance of learning that occurs while doing an enjoyable activity.

Given the fact that the population investigated ranges between 14–19 years old, listening to music, watching movies, playing games, chatting with friends are very common pastimes. As to the participants' opinions to vocabulary encountered in their textbooks, the following quotes show different perspectives: *"Well, yes, we also learn words from textbooks as we have exercises which help us retain words better"* (Participant E, female, school O.G) and *"The vocabulary in our textbooks is mostly for everybody to understand, not quite new for some of us."* (Participant G, male, 15, school G.C.).

Nowadays, students' sources for vocabulary learning are extended and diverse, which gives them the possibility to choose from where they want to pick up new words, according to their interests. Therefore, vocabulary learning during adolescence is deeply rooted in their personal interests. This is an aspect also mirrored in the focus group discussions when students were asked about the words they prefer to learn. In this context, participant B (male, 18, school G.H) replied *"I prefer words which are useful to us, which we are going to use in the future"*.

According to the majority of participants, it is usually this first 'impression' of a word that determines its being retained or not, its being given importance or not. The majority of students' responses suggest that their learning of new words happens outside the classroom, in environments where they have opportunities to use the new words. In support of this statement, participant C (female, 16,

school A.V) noticed: *"I learn new words from the online environment because that is also the place where I tend to use most words I learn"*.

On the other side, students' reaction when encountering a new word is also characterized by avoidance as some students clearly pointed out: *"Sometimes we ignore new words, when we're too lazy to look them up"* (participant A, female, 15, school G.S). However, another student mentioned that, *"If it is for school work, then I don't ignore it, I pay more attention, I think It's important where you encounter that word, that determines your ignoring it or not"*(participant D, female, 15, school N.B). This idea is also supported by another participant in the same group, who states: *"Yes, I agree, if you encounter the word orally, then you don't usually look it up, but if it is in a written text, then there are more chances to look it up" (*participant H, female 16, school N.B). These answers also suggest that most students are generally selective about the words they consider important to remember and overlook those which they believe they might not use: *"I ignore words which I believe I might not use" (participant G, female 16, school A.V); If I understand the rest of the sentence, I usually ignore it"* (participant B, female 17, school A.V).

Overlooking new words is a practice among students and it is determined by whether or not students consider the new word useful, but also on their determination to look up the word and learn it. Also the source of encountering has a great importance, since words encountered orally have fewer chances to be looked up than words encountered in a text. Students' motivation to discover the meaning of a new word is strictly dependent on how they have encountered the word and on the word's usefulness as perceived by the students.

5.2.2. Categories of vocabulary learning strategies used by Romanian students

This section aims at answering the RQ 1, namely: *What types of vocabulary learning strategies do Romanian high school students use in a digital context?* The answer to this question is provided by the results of descriptive statistics presented in both means and percentages but also by the data from the focus group discussions.

In Schmitt's (1997) taxonomy, vocabulary learning strategies are grouped into five categories: determination strategies for discovering the meaning of a new word, memory strategies for storing and retrieving information, metacognitive strategies for planning and monitoring learning, cognitive strategies for producing the language and understanding it and social strategies for cooperating with others while learning. In the current study, I used a five type frequency rating scale for each strategy item ranging from 1 to 5 (from 'never' to 'always'). A reporting scale was used in order to clearly illustrate which groups of strategies Romanian students use most in learning English: 'High Usage' (3.5–5.0), 'Medium Usage' (2.5–3.49), 'Low Usage' (1.0–2.49). These scale ranges were based on Oxford (1990). I used the same scale ranges for reporting overall strategy use by Romanian students and the reporting of strategies for different groups. The reporting of percentages is also based on these scales.

Table 9 shows the total usage of strategies and strategy type use in the sample based on means and percentages. Overall, Romanian students have a medium usage of vocabulary learning strategies (M=2.67), the means showing that the participants' usage of strategies is near the bottom of the medium range. Romanian students

prefer the social strategies (M=3.01), followed by determination (M=2.85), metacognitive (M=2.58), cognitive (M=2.46) strategies. Memory strategies (M=2.43) are the least preferred type of strategies.

The percentages also show that social strategies are high usage strategies for a higher percentage of participants (26.5%) than determination (14.1%), metacognitive (13%), cognitive (10.2%) and memory (2.4%) strategies.

The minimum mean values in table 9 are the minimum mean values for a set of items, therefore the 1.33 value is the minimum value found in the sample for Determination strategies means. Likewise, the maximum mean values are maximum values for a set of items.

Table 9: Overall VLS use

Variable	M	SD	Minimum	Maximum	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
Social	3.01	0.65	1	5	17.9	55.6	26.5
Determination	2.85	0.55	1.33	5	23.5	62.4	14.1
Metacognitive	2.58	0.79	1	5	48.3	38.7	13
Cognitive	2.46	0.75	1	5	51.1	38.7	10.2
Memory	2.43	0.51	1	4.43	51.6	46	2.4
Total	**2.67**	**0.5**	**1.26**	**4.3**	**32.7**	**62.6**	**4.7**

N=1239

5.2.3. Individual vocabulary learning strategies used by Romanian students

The following sections answer RQ 2, namely: *What individual vocabulary learning strategies do Romanian high school students use?*

Tables 10, 11 and 12 rank strategy use by individual mean scores and percentages on the vocabulary learning strategies questionnaire for the entire sample. The results are presented in descending order from the most to the least used. Accordingly, Table 10 shows which vocabulary learning strategies have a high usage. Table 11 presents the strategies which have a medium usage, whereas Table 12 refers to the strategies least used.

5.2.3.1. High usage vocabulary learning strategies

Table 10: High usage vocabulary learning strategies

TYPE	Strategy statement	M	SD	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
HIGH USAGE (3.5–5.0)						
Mem	If the word has an impact on me I simply remember it.	3.94	1.14	12.8	16	71.2
Met	I remember new words when I encounter them again in movies and music	3.70	1.12	15.3	24.9	59.8
Det	I guess the meaning of the new word from the context in which it appears.	3.56	0.87	10.4	33.8	55.8
Det	I figure out the meaning if I see a picture of it.	3.56	1.03	15	29.3	55.7

The results of descriptive statistics show that the most used strategy is, *If the word has an impact on me I simply remember it* (M=3.94). Therefore, if certain words draw students' attention more than

others, they are likely to remember them, as the following quotes suggest: *"I remember the words which drew my attention."; "I remember the words which had an impact on me" (quotes from the open-ended question).* Based on my observation, new words may have impact if encountered in meaningful contexts, such as the English media.

This strategy is followed in usage by the item *I remember new words when I encounter them again in movies and music* (M=3.70). This finding is not very surprising in the socio-cultural context where the study took place. As explained in Chapter two, Romanian students are exposed to movies and songs in English on a regular basis given the fact that materials are very accessible. Also its high usage suggests the fact that extensive exposure to authentic materials represents a significant part in the participants' vocabulary learning.

Encountering new words in other contexts and remembering the context represent strategies which several students also reported in the open-ended questions. The following quotes show the importance of context in retaining the meaning of new words: *"I remember the meaning of the words if I remember the contexts." / "Remembering words from context, without other complicated strategies" (anonymous quotes).*

Also three respondents in the focus group discussions reported that constant use of new words along with their frequent encountering in other contexts and situations, such as movies, music, represent helpful ways to remember new words. The following quotes illustrate the way they expressed the use of these strategies but also the importance of frequency of occurrence of a word:

> *"You retain the word faster if you use it constantly, or hear it very often"* (participant G, male, 18, school N.B).

"I remember the words if I encounter them again in music or films" (anonymous).

"I look up the word in the dictionary, I write it down, however, the most useful thing is encountering the word again in different contexts." (participant A, female, 16, school A.V).

According to the data, the strategy *I guess the meaning of the new word from the context in which it appears* (M=3.56) is the third most used strategy by Romanian students. This finding can be explained through the fact that it is also a strategy taught by teachers in the classroom. Also the use of this strategy allows learners to learn vocabulary autonomously resulting in vocabulary extension as suggested by Nation and Clarke (1980). This strategy saves time and allows students to move on with their reading while also increasing reading efficiency (Nation and Clarke, 1980).

Likewise, the majority of students' answers in the focus groups revealed that the two most used strategies are guessing from context followed by looking up the word in the dictionary strategy, as the following quotes show:

"First time I see a word I don't know, I try to figure out its meaning from context, then if I can't, I look it up in the dictionary" (participant F, male, 17, school O.G).

"I try to see if I can figure out the word from the context, however, the context is not very clear sometimes, but if it helps me get the main idea, then I don't look it up in the dictionary" (participant A, female, 18, school G.S).

Another frequent strategy used by students in order to determine the meaning of a new word is *I figure out the meaning if I see a picture of it* (M=3.56). Based on my personal observation, students

in the classroom like the exercises 'label the pictures' they have in their textbooks. The frequency of this strategy is not very surprising given that it is a strategy very familiar to students.

5.2.3.2. Medium usage of vocabulary learning strategies

Table 11 shows the strategies which are reported to have a medium usage among Romanian students.

Table 11: Medium usage vocabulary learning strategies

TYPE	Strategy statement	M	SD	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
MEDIUM USAGE (2.5–3.49)						
Soc	I ask the teacher for the meaning of the word.	3.43	1.03	18.6	31.1	50.4
Soc	I ask a classmate/friend.	3.43	1.03	17.5	30.8	51.8
Cog	I write the word in my classroom notebook in case I need it in the future.	3.42	1.30	24.7	23.6	51.7
Mem	I remember the word by recalling the context/ sentence/example where I encountered.	3.42	1.17	21.4	25.9	52.8
Mem	I connect the word with similar words in Romanian or from other foreign languages I know (e.g. coffee-cafea).	3.28	1.12	23.5	31.3	45.2
Mem	I study the spelling of the new word carefully.	3.26	1.06	25	29.4	45.6
Det	I think of any similar Romanian words that could mean the same thing (e.g. imagination – imaginatie).	3.25	1.12	24.6	32	43.4

TYPE	Strategy statement	M	SD	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
MEDIUM USAGE (2.5–3.49)						
Mem	I remember the new word by thinking about it very much.	3.13	1.17	31.1	28.5	40.3
Soc	I use the new words as often as I can in conversations/chats.	3.11	1.16	30	33.2	36.8
Mem	I try to remember the spelling without writing down the word.	3.07	1.13	31.3	30.4	38.3
Det	I look up the word in the dictionary if the context is not clear enough.	3.03	1.10	34.6	30.2	35.2
Soc	I figure out the meaning of a word if I work in pair or group work.	3.00	1.08	32.2	36.5	31.4
Det	I look up the word in an English-Romanian dictionary.	3.00	1.23	38.6	24.7	36.7
Mem	I associate the new word with an image.	2.91	1.17	37.3	30.4	32.3
Mem	I remember a word after I have looked it up in the dictionary several times.	2.89	1.23	38.7	26.8	34.5
Mem	I learn the words of an idiom together as if they were just one word.	2.87	1.23	40	27.6	32.4
Cog	I listen to the pronunciation of new words during the English lesson then I also pronounce them.	2.79	1.18	42.6	30.4	27

TYPE	Strategy statement	M	SD	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
MEDIUM USAGE (2.5–3.49)						
Soc	I practise the meaning of new words during the activities in the English lesson.	2.73	1.17	43	31.1	25.9
Cog	I revise the vocabulary section in my textbook regularly.	2.62	1.22	47.4	28	24.7
Det	First I work out what part of speech it is – Verb/ Adjective/Noun – which helps me to guess the word's meaning.	2.60	1.22	50.4	25.6	23.9
Cog	I write the new word with a translation or definition in a word list which I revise regularly.	2.59	1.29	50.3	24	25.7
Det	I look up the word in the dictionary to check if my guessing was correct.	2.57	1.13	50.8	27.5	21.7
Mem	I associate the new word with a synonym or an antonym.	2.56	1.13	51.1	26.4	22.4
Mem	I associate the word with other words from the same thematic field (e.g. vegetables, utensils etc.)	2.52	1.07	50.4	31	18.6
Mem	I make sentences with the new words.	2.52	1.10	51.5	29.4	19.1
Met	I practise the meaning of new words at home as well.	2.51	1.17	52.6	26.4	20.9

Some of the medium usage strategies in table 11 feature the word learning behavior which happens during regular English

lessons. Therefore, words encountered in class, during the lessons, would normally be written down in students' notebooks, accompanied by a translation or an example sentence as the following quote suggests: *"At school it's easy to retain words as we use those words throughout the unit, at the end of the unit we have a test with fill in the blanks exercises"* (participant F, male, 16, school O.G). In the same context, this participant stated: *"We make sentences with the new words, exercises from textbooks"* (participant G, female, 16, school N.B) and *"We usually write the words in class as we need to learn them for tests"* (participant D, female, 15, school G.S). The school environment offers the participants the possibility to consolidate the new words through homework or vocabulary exercises in the textbook. During the English lessons students may come across new words which they use throughout the unit in various contexts and which are tested. Likewise, the participants associated repetition of words with a school based learning behavior.

Repetition is defined by the majority of the students in the focus groups in terms of oral rehearsal whereas written repetition refers to writing the word in a classroom notebook. Therefore most of the focus group respondents reported that oral rehearsal of a word along with its writing in the classroom notebook improves their retention of new words. The following quotes illustrate how the respondents use this strategy for their vocabulary learning: *"I read them aloud a couple of times and that's it" (anonymous quote from the open-ended question).* According to the majority of participants in the focus groups, repetition does not equate to rote learning of words, but it usually involves hearing the word several times, making sentences with that word, writing it down in their regular

classroom notebook, saying it aloud several times or simply looking it up in the dictionary more than once. On the other hand, according to the participants, repetition of words also equates with the repeated use of the new word: *"I try to repeat the word in my mind many times"* (participant F, male, 15, school O.G). Likewise, repetition means using the opportunities that bring you in contact with a specific word, such as the following quote suggests: *"Repetition is probably the most useful method to retain the word-anything that brings you back in contact with that word again"* (participant B, male, 17, school O.G).

However, the majority of the participants also believe that it is important to set your mind to learn a new word putting forward the idea that a more conscious thinking about a word would be beneficial while they also exemplify the fact that word learning is not necessarily an effortless activity. The following quotes illustrate this: *"You may write down the words, but if you don't set your mind that you want to retain those words and never go back to them again, then writing is useless"* (participant B, female, 16, school O.G).

The use of cognates, the item *I connect the word with similar words in Romanian or from other foreign languages I know (M=3.28, SD=1.12),* has been mentioned by the participants in the focus groups several times. Therefore, if students encountered a word in English which is similar in form and meaning with another word in Romanian, French or German, they would automatically associate the two words. In this situation the students do not need to use any other consolidation strategies as language transfer helps them to retain the word faster. Furthermore, in school C.G, students study in German and they commented that whenever they read a text in

German or English they encounter words which they automatically recognize as one student points out: *"sometimes words in English come very easily, only because we saw them before in German, and the two languages are quite similar; when we read something in German, we realize how many words there are from English"* (participant D, male, 15, school C.G). Also, students studying French as a foreign language expressed a similar view, *"sometimes, we know the meaning of words in French, only because we know the meaning in English, and the form is quite similar, in some cases"* (participant E, female, 16, school O.G).

Likewise, in their open responses in the questionnaire, several respondents listed various strategies related to different word associations they make. Although they are similar to some medium usage strategies, their wording is different. For example, some respondents would also associate the word with its translation, with a personal experience or with pictures, situations, objects. The following anonymous quotes illustrate these strategies: *"I associate the new word with various objects, situations, experiences."/ "I believe the connection between words helps me retain them, I connect words easily, even in two different languages."*

Also, according to the data, students remember the meaning of a new word by associating it with the context in which they encountered that word, the use of the strategy *I remember the word by recalling the context/sentence/example where I encountered* (M=3.42) illustrates this. Likewise, the data from the focus groups illustrate how students make use of this strategy: *"I try to remember the context/expression/phrase/ where I heard the word-not only the word in isolation"* (participant A, female, 17, school O.G)*."/ "If you remember the context where you've encountered the new word, then you certainly*

remember the meaning of the word as well" (participant A, female, 16, school A.V).

Using the new word in conversations with friends, classmates, family or in an online environment is a very useful way to remember the meaning of that word, as students' open answers showed. Therefore, once students have discovered the meaning of a new word, they would rather use it as soon as possible as the following anonymous quotes suggest: *"I retain the new words if I use them in speaking-on a daily basis."; "I use them as much as possible in conversations".* The above strategies are the equivalent of the following social strategies, *I ask the teacher for the meaning of a new word* (M=3.43, SD=1.03) and *I ask a classmate/friend* (M=3.43, SD=1.03). The use of social strategies by these students is illustrated by the following quotes as well: *"I look over the new words with my classmates, friends at school, usually in a group."/ "I use the new words when I play online games and I chat with other players."*

5.2.3.3. Low usage vocabulary learning strategies

As to the strategies which are reported to have a low usage (M=2.4 or below), the findings in Table 12 indicate that Romanian students did not express their preference for strategies which seem to require extra effort on the part of the learner (e.g. keeping a vocabulary notebook, making word cards, spaced repetition of new words, using a monolingual dictionary).

The table featuring low usage vocabulary strategies shows that well-known vocabulary consolidation strategies, such as the use of vocabulary notebooks, word cards, and other specific memory

strategies for learning new words, do not represent features of the vocabulary behavior of these participants.

Table 12: Low usage vocabulary learning strategies

TYPE	Strategy statement	M	SD	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
LOW USAGE (M=2.4 or below)						
Mem	I say the word aloud repeatedly to remember it.	2.39	1.16	56.6	26.3	17.1
Met	I look over the new words one day, then a few days later and so on as many times is necessary to retain the words.	2.38	1.14	58.6	23.3	18.1
Soc	I practise the meaning of new words with my friends/classmates during pair or group work at school.	2.37	1.20	57.6	22.2	20.1
Mem	I connect the English word to a Romanian word by sound, for example, the English word 'far' sounds very similar to the Romanian word 'far').	2.35	1.16	58.3	23.5	18.3
Mem	I connect the new word to a personal experience.	2.31	1.12	60	24.5	15.5
Mem	I try to relate the word to its part of speech (noun, verb, adjective).	2.26	1.07	62.4	23.4	14.1
Mem	I paraphrase the word's meaning.	2.21	1.08	64.5	22.1	13.5
Met	I test myself with new words.	2.18	1.11	65.9	21.8	12.4

TYPE	Strategy statement	M	SD	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
LOW USAGE (M=2.4 or below)						
Met	I do vocabulary exercises in my textbook.	2.16	1.07	65.5	22.6	11.9
Det	I look up the word in an English-English dictionary.	2.15	1.14	66	18.5	15.4
Mem	I group words together spatially on a page in my notebook by forming geographical patterns (e.g. triangles, circles, columns etc.).	2.13	1.26	65.7	18.2	16.1
Cog	I copy the word several times.	2.10	1.16	69.8	15.5	14.6
Mem	I associate the word with a familiar place.	2.05	1.03	70.1	20.5	9.4
Mem	I use 'scales' for gradable adjectives (e.g. good–better–the best).	2.05	1.13	68.1	19.8	12.1
Cog	I write the new word in a vocabulary notebook.	2.02	1.17	69.9	17	13.1
Mem	I link the word to one that rhymes with it (e.g two is a shoe).	1.95	1.11	73.3	15.4	11.4
Mem	I group the new word in 'word families'.	1.95	1.01	74.2	17.1	8.6
Det	I break down the word into parts and see if I know any of them like 'audi' means 'sound'.	1.92	1.02	74	17.4	8.6
Mem	I use semantic feature grids (e.g. man, woman = human beings etc.)	1.86	1.04	75.6	15.7	8.7

TYPE	Strategy statement	M	SD	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
LOW USAGE (M=2.4 or below)						
Mem	I try to remember the word's affixes and root separately.	1.77	0.90	80.9	13.9	5.1
Cog	I make a card with the new word	1.71	1.05	80	12	8
Mem	I group words together within a 'storyline' (e.g. dogs, cats like….).	1.68	1.00	81.7	11	7.3
Mem	I arrange the new words using graphic organizers (e.g. word trees).	1.63	0.99	83.5	9.3	7.3
Mem	I write the new words on a wall, door, whiteboard, pin up post so that I can always see them.	1.61	1.04	82.9	9.3	7.8
Mem	I underline the initial letter of the word.	1.53	0.89	86	9	5

When being asked during the focus groups about some of the low usage strategies, the majority of the participants in the focus groups were familiar with the meaning of 'vocabulary notebooks', 'word cards', 'vocabulary exercises' to a certain extent. The following quote illustrates the participants' engagement with one of these strategies: *"I remember keeping a vocabulary notebook in grade 3"* (participant G, female 16, school A.V).

As to the use of words cards, only the participants from school G.C were familiar with the concept as they have made some for a specific vocabulary topic in order *"to learn the words for phobias in*

an interactive way" (participant C, male, 15). Additionally, no student in these focus groups has mentioned the learning of words from word lists, the only reference to a word list was when learning irregular verbs.

The low usage table includes strategies which are presented in students' textbooks (e.g. *I try to relate the word to its part of speech; I use semantic feature grids; I use scales for gradable adjectives; I group the new word in 'word families'*). Students may use them only in the context of classroom learning, but not for words they encounter incidentally. Also grouping words within a storyline or using graphic organizers are associated with teaching strategies, rather than strategies students would use on their own. Writing the words in notebooks and copying the word several times also happen during classroom work, according to the participants.

Based on my observation in the classroom but also from what students told me during the focus groups, the keyword method is not used as a 'strategy' in itself, but students perceive it as a rather interesting linguistic point. It is indeed very unlikely that students think about Romanian words which sound like English words. However, according to students, when they do come across such examples, they usually retain the words because the similarity draws their attention.

Consequently, the low usage strategies represent strategies students would mostly use in the context of classroom learning or under teacher guidance, not necessarily in the context of incidental learning. It is also the case that different students use different strategies and they will certainly not use all the strategies in the low usage scale.

5.2.3.4. Features of Romanian students' most used vocabulary learning strategies

The data presented in the previous sections uncovered that all in all Romanian students prefer vocabulary learning strategies which meet the following characteristics:

Firstly, they prefer strategies which are enjoyable (e.g. remembering words if they encounter them again in movies and music), which they are familiar with (e.g. the guessing from context strategy), which respond to their interests (e.g. learning words from reading something they like) and which are easy to handle and do not require too much effort on the part of the learners (e.g. associating the new word with a picture). Likewise, they prefer strategies which enable them use information they already know (e.g. connecting the word with similar words in Romanian or from other foreign languages they know) and which allow them to interact with peers or teachers (e.g. asking the teacher/a friend/a classmate for the meaning of the word).

On the other hand, there are participants who have a different idea as to what they believe it is helpful in remembering new words and their views were expressed during the focus group discussions. In this context, most of the participants pointed out that it is not very common to deliberately sit down and learn words and that word learning is generally similar to acquisition: *"You never sit down at home and think that you need to learn some words now, you just never do that" (participant C, male, 18, school G.S).* Therefore, while complying with the 'fill in the blanks' behavior, they also take into account the 'unconscious' aspect of word learning, a concept which they could not explain quite well, but equally significant for their

vocabulary learning: *"Sometimes we learn words without realizing it and then use them, I can't explain how that happens, it's mostly with words we learn from outside school" (participant G, female, 17, school A.V).* In this context, some of the participants distinguished between the vocabulary that they consciously learn at school and the vocabulary they learn incidentally, outside: *"It's usually at school that I try to practise words, consolidate them maybe, as for the words I learn from outside school, I try to use them" (participant B, female, 16, school A.V).*

Additionally, vocabulary learning is undoubtedly considered a personal enterprise by students and whereas for grammar learning there are specific rules, which students need to learn, for vocabulary there are no such boundaries and students are free to organize vocabulary learning in their own way. This attitude is expressed below: *"At the beginning I try to figure out what the word means, then I think whether it is useful or not to retain the word, if it is, I simply memorize it. If I think that I might use it sometime in the future, I write it down somewhere, especially if I consider that the word is important for me"* (participant D, male, 17, school N.B). This statement also illustrates that one's vocabulary learning tends to be rather personal and it is very connected with personal learning style and interests as another student considers as well, *"If it is an important word, then I write it down, if the word really interests me"* (participant A, male, 16, school O.G).

The view that vocabulary learning is a personal endeavor is also expressed by the following student, *"I believe that this word learning behavior depends on the type of person you are, if you are an unorganized person then you can learn in an unorganized way, but if you are very organized then you can't learn in an unorganized way"* (participant D,

female, 18, school A.V). This fact is also supported by students' perceived difficulty in describing their learning strategies, which I could notice during the focus groups.

All in all, I believe the following quote summarizes very well most of the participants' approach to vocabulary learning in this particular context: *"It is not a matter of how much time you spend learning words-but a matter of how well you spend that time*" (participant A, female, 16, school A.V).

5.3. Differences in strategy use across the four independent variables

The following sections answer RQ 3, namely: *How do the types of vocabulary learning strategies vary across students' age, academic profiles, language program and gender?* In order to answer this question I used both descriptive and inferential statistics.

5.3.1. Use of vocabulary learning strategies by academic profile

Table 13 reports descriptive statistics for the differences in strategy use in the four academic profiles. As shown in Table 13, based on the same reporting scales used in this study (High usage = 3.5–5, Medium Usage = 2.5–3.49, Low Usage = 1–2.49), the humanities and math-ICT profiles have a low usage of cognitive and memory strategies and a medium usage of metacognitive, determination and social strategies. However, students following a science profile have a medium usage in all types of strategies. Compared with the other profiles, the economic-technical profile is characterized by less use of strategies in all categories.

Table 13: Use of strategies by academic profile

Academic profile	StrategyType	Soc.	Det.	Met.	Cog.	Mem.	Total	n
Humanities	M	3.05	2.93	2.65	2.48	2.46	2.71	261
	SD	0.63	0.54	0.84	0.76	0.51	0.5	
	Percentage of low usage (1.0–2.49)	15.7	17.7	45.1	52.6	50	32.6	
	Percentage of medium usage (2.5–3.49)	55.6	63.3	37.4	35.9	47.4	61.7	
	Percentage of high usage (3.5–5.0)	28.7	19	17.5	11.6	2.6	5.7	
Science	M	3.10	3.04	2.72	2.59	2.54	2.8	244
	SD	0.59	0.52	0.74	0.73	0.49	0.46	
	Percentage of low usage (1.0–2.49)	12.6	15.4	38.5	43	44.1	21.7	
	Percentage of medium usage (2.5–3.49)	56.3	62.9	46.3	44.3	52.3	72.1	
	Percentage of high usage (3.5–5.0)	31.3	21.7	15.2	12.8	3.5	6.1	
Math-ICT	M	3.01	2.82	2.55	2.42	2.37	2.63	368
	SD	0.72	0.53	0.80	0.75	0.50	0.52	
	Percentage of low usage (1.0–2.49)	19.9	22.7	49.5	52.8	55.3	34.8	
	Percentage of medium usage (2.5–3.49)	52.5	66	39	38.3	43.1	61.1	
	Percentage of high usage (3.5–5.0)	27.7	11.3	11.5	9	1.6	4.1	
Economic-Technical	M	2.88	2.62	2.43	2.39	2.38	2.54	247
	SD	0.59	0.54	0.76	0.76	0.53	0.49	
	Percentage of low usage (1.0–2.49)	22.5	39.1	59.6	54.4	55.2	40.5	
	Percentage of medium usage (2.5–3.49)	59.6	55.5	32	37.1	42.5	56.3	
	Percentage of high usage (3.5–5.0)	17.8	5.5	8.4	8.5	2.3	3.2	

Table 13 also shows the preference of strategies based on usage percentage. Based on this table, a higher percentage of students in science have a high usage of all types of strategies whereas a lower percentage of students have a low usage. In terms of which academic profile makes more use of vocabulary learning strategies, the data showed that it is the science profile, which is rather interesting given the fact that students enrolled in this profile may not necessarily allocate too much time to language learning, compared to the students in the humanities. In Table 13, the total column includes the average for the values (M, SD etc.) of the variables (Social, Determinative etc.), for example, for the M values of the variables, the average is 2.71, for SD is 0.5. The total column is not the sum of the values.

In order to determine any significant variation in strategy use relative to academic profile, gender, language program and age, analyses of variance (ANOVA) were conducted using these factors as independent variables and the five categories of strategies as dependent variables.

The results are reported in Table 14.

Table 14: Use of strategies by academic profile

Strategy	Humanities		Science		Math-ICT		Economic-Technical		F	Sig.	ANOVA Performed	Post-Hoc Test Used	Difference*
	M	SD	M	SD	M	SD	M	SD					
Soc	3.05	0.63	3.10	0.59	3.01	0.72	2.88	0.59	7.44	0.00	Welch	Games-Howell	E-T < H; E-T < S; E-T < M-ICT
Det	2.93	0.54	3.04	0.52	2.82	0.53	2.62	0.54	31.10	0.00	One-Way	Scheffe	E-T < H; M-ICT < S; E-T < S; E-T < M-ICT

Strategy	Humanities		Science		Math-ICT		Economic-Technical		F	Sig.	ANOVA Performed	Post-Hoc Test Used	Difference*
	M	SD	M	SD	M	SD	M	SD					
Met	2.65	0.84	2.72	0.74	2.55	0.80	2.43	0.76	7.66	0.00	Welch	Games-Howell	E-T < H ; M-ICT < S ; E-T < S
Cog	2.48	0.76	2.59	0.73	2.42	0.75	2.39	0.76	4.10	0.007	One-Way	Scheffe	M-ICT < S ; E-T < S
Mem	2.46	0.51	2.54	0.49	2.37	0.50	2.38	0.53	7.39	0.00	One-Way	Scheffe	M-ICT < S ; E-T < S
Total	2.71	0.50	2.80	0.46	2.63	0.52	2.54	0.49	14.23	0.00	One-Way	Scheffe	E-T < H ; M-ICT < S ; E-T < S
n	286		270		408		275						

* $p < 0.05$

For two categories of strategies, social and metacognitive, Levene's test of homogeneity of variance was significant, which meant that this assumption was violated (Field, 2013). To rectify this, I conducted a Welch's ANOVA with a Games-Howell post hoc-test for these two subscales.

A. Overall strategy use by academic profile

When participant data for all strategies were grouped by academic profile (humanities, science, math-ICT and economic-technical) data analysis revealed statistically significant differences for the overall use of strategies by students in different academic profiles (F=14.23, p=0.00).

A summary of the ANOVA results for the use of the five categories of strategies by academic profile is shown in Table 14. Post hoc comparisons using Scheffe test showed that humanities students (M=2.71) use more strategies than economic-technical students

(M=2.54). Also, science students reported using more strategies (M=2.80) than math-ICT students (M=2.63) and economic-technical students (M=2.54). The other comparisons were not significant.

B. Specific strategy use by academic profile

ANOVA analyses presented in Table 14 also revealed significant differences with regard to specific types of strategies used by different academic profiles. There were significant differences between groups in the use of social strategies (F=7.44, p=0.00), determination strategies (F=31.10, p=0.00), metacognitive strategies (F=7.66, p=0.00), cognitive strategies (F=4.10, p=0.007) and memory strategies (F=7.39, p=0.00). For One-Way ANOVA analyses, post hoc comparisons using Scheffe test showed significant differences in the following scales:

a. Determination strategies were more used by humanities students (M=2.93) than by economic-technical students (M=2.62) and by science students (M=3.04) more than math-ICT (M=2.82) and economic-technical (M=2.62) students. These strategies were also significantly used more by math-ICT students (M=2.82) than by economic-technical students (M=2.62);
b. Memory strategies were more used by science students (M=2.54) than by math-ICT students (M=2.37) and economic-technical students (M=2.38).
c. Cognitive strategies were also significantly more used by science (M=2.59) students than math-ICT and economic-technical students. Cognitive strategies were also more used by science students than math-ICT (M=2.42) and economic-technical students (M=2.39). The other comparisons were not significant.

For Welch's ANOVA analysis, post hoc comparisons using Games-Howell test showed significant differences in the following conditions:

a. Social strategies were more used by the humanities students (M =3.05) than by economic-technical students (M=2.88) and by science (M=3.10) students more than by economic-technical students (M=2.88). These strategies were also more used by math-ICT students (M=3.01) than by economic-technical students (M=2.88);
b. Metacognitive strategies were more used by humanities students (M=2.65) than economic-technical students (M=2.43) and more by science students (M=2.72) than math-ICT (M=2.55) and economic-technical students (M=2.43). The other comparisons were not significant. Students in each of the four academic profiles favored the use of social and determination strategies most and the use of cognitive and memory strategies least.

5.3.2. Use of vocabulary learning strategies by language program

Table 15 reports descriptive statistics for the use of strategies by language program. According to the low, medium and high usage scale ranges, the types of vocabulary learning strategies used by students following different language programs are included in the low usage scale. Table 15 also uncovers important differences in strategy use between students following an intensive-bilingual program and students following a normal program. The data show that students enrolled in an intensive-bilingual program would

use more vocabulary learning strategies than students following a normal program.

Table 15: Use of the strategies by language program

Language program \ Strategy type		Soc.	Det.	Met.	Cog.	Mem.	Total	n
Intensive English	M	2.16	2.01	1.75	1.68	1.57	2.76	418
	SD	0.65	0.61	0.72	0.68	0.56	0.49	
	Percentage of low usage (1.0–2.49)	14.5	18.1	41.2	44.5	46.5	26.8	
	Percentage of medium usage (2.5–3.49)	55.4	62.9	42.6	43.3	50.1	67	
	Percentage of high usage (3.5–5.0)	30.1	19.1	16.2	12.1	3.4	6.2	
Bilingual	M	2.17	2.07	1.8	1.69	1.55	2.77	114
	SD	0.63	0.58	0.75	0.70	0.52	0.49	
	Percentage of low usage (1.0–2.49)	12.6	13.3	39.4	44.1	45.6	24.6	
	Percentage of medium usage (2.5–3.49)	57.5	66.7	40.9	42.3	53.5	69.3	
	Percentage of high usage (3.5–5.0)	29.9	20	19.7	13.5	0.9	6.1	
Normal	M	2.02	1.80	1.54	1.51	1.46	2.58	588
	SD	0.67	0.59	0.66	0.64	0.54	0.50	
	Percentage of low usage (1.0–2.49)	21.5	29.6	55.4	57	56.5	38.4	
	Percentage of medium usage (2.5–3.49)	55.4	61.2	35.3	34.7	41.6	58.2	
	Percentage of high usage (3.5–5.0)	23.2	9.2	9.3	8.3	2	3.4	

The percentages in Table 15 show small differences between the strategy use of students following an intensive program and students following a bilingual program but slightly more important differences

between the intensive-bilingual groups and the normal group. Thus intensive English students use more social and memory strategies whereas bilingual students use more determination, metacognitive and cognitive strategies.

Table 16 shows ANOVA analysis results for the use of English vocabulary learning strategies when participants were grouped by language program.

Table 16: Use of the strategies by language program

Strategy type	Intensive English		Bilingual		Normal		F	Sig.	ANOVA Performed	Post-Hoc Test Used	Difference*
	M	SD	M	SD	M	SD					
Soc.	2.16	0.65	2.17	0.63	2.02	0.67	7.50	0.00	One-Way	Scheffe	N < I
Det.	2.01	0.61	2.07	0.58	1.80	0.59	21.17	0.00	One-Way	Scheffe	N < I ; N < B
Met.	1.75	0.72	1.80	0.75	1.54	0.66	13.43	0.00	One-Way	Scheffe	N < I ; N < B
Cog.	1.68	0.68	1.69	0.70	1.51	0.64	13.04	0.00	One-Way	Scheffe	N < I ; N < B
Mem.	1.57	0.56	1.55	0.52	1.46	0.54	8.86	0.00	One-Way	Scheffe	N < I
Total	2.76	0.49	2.77	0.49	2.58	0.50	21.06	0.00	One-Way	Scheffe	N < I ; N < B
n	469		127		643						

* $p < 0.05$

The difference in overall strategy use between intensive English, bilingual and normal language programs was statistically significant (F=21.06, p=0.00).

Post hoc comparisons using Scheffe test showed that intensive English students used more strategies (M=2.76) than students following a normal language program (M=2.58). Also, students with a bilingual language program use more strategies (M=2.77) than students with a normal language program (M=2.58). The other comparisons were not significant.

With regard to specific strategies used by students in different language programs, post hoc comparisons using Scheffe test showed differences in the use of specific types of strategies in the following groups:

a. Social strategies were more used by students with an intensive English program (M=2.16) than by students with a normal language program (M=2.02).
b. Determination strategies were more used by students following an intensive English program (M=2.01) than by students following a normal language program (M=1.80). These strategies were also more used by students following a bilingual language program (M=2.07) than by students following a normal language program (M=1.80).
c. Metacognitive strategies were also more used by students in the intensive English program (M=1.75) than by students in a normal language program (M=1.54) and by students in a bilingual language program (M=1.80) than by students in a normal language program (M=1.54).
d. Cognitive strategies were more used by students in an intensive English program (M=1.68) than by students in a normal language program (M=1.51) and by students in a bilingual language program (M=1.69) than by students in a normal language program (M=1.51).
e. Memory strategies were more used by students in an intensive English program (M=1.57) than by students in a normal language program (M=1.46).

The other comparisons were not significant. Similar to the other group comparisons performed, students from the three language

programs favored the use of social and determination strategies most and the use of cognitive and memory strategies least.

5.3.3. Use of vocabulary learning strategies by gender

Table 17 indicates descriptive statistics results for the use of vocabulary learning strategies when participants were grouped by gender. As the data in Table 17 show, females use more strategies than males in all types of strategies. However, in terms of the low, medium, high usage scale, both males and females have in common the low usage of memory strategies. Also, determination and social strategies have medium usage in both sexes.

Table 17: Use of the strategies by gender

Gender \ Strategy type		Soc.	Det.	Met.	Cog.	Mem.	Total	n
Male	M	2.89	2.68	2.46	2.30	2.35	2.54	455
	SD	0.68	0.55	0.81	0.77	0.54	0.51	
	Percentage of low usage (1.0–2.49)	23	33.9	54.7	59.8	55.3	42.4	
	Percentage of medium usage (2.5–3.49)	57	58	34.1	31.7	43.2	55.8	
	Percentage of high usage (3.5–5.0)	20	8.1	11.1	8.4	1.5	1.8	
Female	M	3.09	2.96	2.67	2.57	2.48	2.75	665
	SD	0.62	0.52	0.77	0.72	0.49	0.47	
	Percentage of low usage (1.0–2.49)	14.5	16.3	44.1	44.9	49.1	26	
	Percentage of medium usage (2.5–3.49)	54.7	65.5	41.7	43.6	47.9	67.2	
	Percentage of high usage (3.5–5.0)	30.8	18.2	14.2	11.5	3	6.8	

The percentages in Table 17 uncover that females have a higher usage of social strategies than males do (30.8%, respectively 20%). In terms of high usage, females use significantly more determination strategies than males do (18.2%, respectively 8.1%).

Table 18 shows ANOVA analysis results for the use of English vocabulary learning strategies when participants were grouped by gender.

Table 18: ANOVA analysis for the use of strategies by gender

Strategy type	Male		Female		F	Sig.	ANOVA Performed	Difference*
	M	SD	M	SD				
Soc.	2.89	0.68	3.09	0.62	26.04	0.00	Welch	M < F
Det.	2.68	0.55	2.96	0.52	79.60	0.00	One-Way	M < F
Met.	2.46	0.81	2.67	0.77	21.07	0.00	One-Way	M < F
Cog.	2.30	0.77	2.57	0.72	42.11	0.00	One-Way	M < F
Mem.	2.35	0.54	2.48	0.49	18.68	0.00	Welch	M < F
Total	2.54	0.51	2.75	0.47	58.75	0.00	One-Way	M < F
n	495		744					

* $p < 0.05$

The difference in overall strategy use between male and female students was statistically significant (F=58.75, p=0.00), with females reporting using more strategies (M=2.75) than males (M=2.54). ANOVA analysis showed significant differences in the use of VLS. Females engaged more than males in all the five types of strategies. Both females and males favored most the use of social (M=3.09 and M=2.89, respectively) and determination strategies (M=2.96 and M=2.68, respectively) and favored least the use of cognitive (M=

2.57, M=2.30, respectively) and memory strategies (M=2.48, M=2.35, respectively).

5.3.4. Use of vocabulary learning strategies by age

Descriptive statistics in Table 19 indicates that both age groups (14–16; 17–19) have low usage of strategies, however, the 14–16 group has a higher usage of vocabulary learning strategies.

Table 19: Use of the strategies by age

Age	Strategy type	Soc.	Det.	Met.	Cog.	Mem.	Total	n
14–16	M	2.13	1.91	1.68	1.60	1.53	2.69	594
	SD	0.66	0.61	0.72	0.67	0.55	0.49	
	Percentage of low usage (1.0–2.49)	16.1	23.6	46.5	50.3	50.1	30.5	
	Percentage of medium usage (2.5–3.49)	54.9	62	38.6	39	47.2	64.6	
	Percentage of high usage (3.5–5.0)	29	14.4	14.9	10.7	2.7	4.9	
17–19	M	2.03	1.90	1.60	1.58	1.49	2.64	526
	SD	0.66	0.60	0.68	0.66	0.54	0.51	
	Percentage of low usage (1.0–2.49)	20	23.5	50.5	51.9	53.3	35.2	
	Percentage of medium usage (2.5–3.49)	56.4	62.8	38.7	38.4	44.6	60.3	
	Percentage of high usage (3.5–5.0)	23.5	13.7	10.8	9.7	2	4.6	

In terms of percentages, Table 19 also uncovers that the 14–16 group has a higher usage of strategies compared to the 17–19 group. Important differences can be noticed in social strategies

(14–16, 29%, whereas the 17–19 group 23.5%) and also in metacognitive strategies (14–16, 14.9% and the 17–19 group 10.8%).

Table 20 shows ANOVA analysis results for the use of English vocabulary learning strategies when participants were grouped by age range.

Table 20: Use of the strategies by age

Strategy type	14–16		17–19		F	Sig.	ANOVA Performed	Difference*
	M	SD	M	SD				
Soc.	2.13	0.66	2.03	0.66	9.68	.002	One-Way	17–10 < 14–16
Det.	1.91	0.61	1.90	0.60	1.13	.289	One-Way	-
Met.	1.68	0.72	1.60	0.68	3.81	.051	One-Way	-
Cog.	1.60	0.67	1.58	0.66	0.46	.497	One-Way	-
Mem.	1.53	0.55	1.49	0.54	0.38	.539	One-Way	-
Total	2.69	0.49	2.64	0.51	3.95	.047	One-Way	17–10 < 14–16
N	665		574					

*p < 0.05

The difference in overall strategy use between the 14–16 group and 17–19 group was statistically significant (F=3.95, p=0.04), with the 14–16 age category reporting using more strategies (M=2.69) than the 17–19 age category (M=2.64). ANOVA analysis showed that the 14–16 age group used more social strategies (M=2.13) than the 17–19 age group (M=2.03). The other comparisons were not significant. Both age groups favored the use of social and determination strategies most and the use of cognitive and memory strategies the least.

5.4. Overall use of digital tools for vocabulary learning

This section answers RQ 4, namely: *What technology enhanced tools do the students use in their learning of vocabulary?*

In Table 21, based on the qualitative data, but also on the features which characterize technology enhanced tools, I grouped the statements on digital tools into types of strategies, similar to the VLS types.

Table 21: Types of digital VLS used by Romanian students

Variable	M	SD	Min	Max	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
Social	2.63	0.76	1	5	40.1	43.7	16.1
Determination	2.83	0.62	1	5	30.2	55.0	14.9
Metacognitive-Cognitive	2.05	0.72	1	5	71.5	24.0	4.5
Memory	2.05	0.67	1	5	77.6	19.3	3.1
Total	2.39	1.24	1	5	54.8	35.5	9.6

N=1239

The quantitative results indicate that determination digital strategies (M=2.83, SD=0.62) are used most by students. These represent strategies which help one find the meaning of a new word using a digital device. The determination digital strategies are followed by the social digital strategies (M=2.63, SD=0.76). The social digital strategies relate to the principles of social constructivism, within which learning is a collaborative process and which is

characterized by authentic contexts, collaboration and meaningful tasks (Ford and Lott, n.d). The social digital strategies are mainly characterized by learning while interacting with others in an online environment. Most often, they are associated with social networking and gaming, as, according to the students in the focus groups, it is during these activities that they encounter and learn most of the new words. According to Pegrum (2014) in CMC tasks learners develop their pragmatic competences by engaging in discourses which highlights the sociocultural perspective of CALL and MALL.

The metacognitive-cognitive category (M=2.05, SD=0.72) includes strategies which focus on the learning or consolidation of new vocabulary using a device (smartphone, PC, laptop, tablet), a CALL or MALL app as well as simply using certain features of programs (e.g. Microsoft Word) to learn or consolidate new words. I combined the metacognitive-cognitive strategies in one category as strategies may fall in one category or another depending on how the student uses the strategy. For example, using a vocabulary learning app could be either a cognitive or a metacognitive strategy. If the learner uses it only to learn vocabulary, then it is a cognitive strategy, but if the learner uses it independently only to improve the knowledge he/she has on some words, then it is a metacognitive strategy. Accordingly, there is a limitation behind this categorization as the same strategy may be included in more than one category, depending on how it is used or on the user's learning behavior. The idea that technology enhanced tools facilitate metacognitive skills has been put forward by Carneiro (2013) and Steffens (2013) as well.

The memory digital strategies (M=2.05, SD=0.67) represent strategies that use a device, a program or an app to enable the

memorization of new words. Although several CALL and MALL programs have features which enable the memorization of words, they also embed features which are related to the social digital strategies, such as sharing the words in a list the user has created, as in Quizlet app and program for instance. Therefore, there is also a limitation behind the categorization of memory digital strategies. These limitations are justifiable since generally one device, a CALL and MALL program usually have more than one feature of function.

Therefore, the categorization of digital strategies is determined by how the learners use the device or the app/program, by their learning behavior, which can be directed either towards learning or entertainment. These two purposes often overlap in an online environment as the student can simply start using an app for vocabulary learning as a form of entertainment having learning outcomes as well.

Table 22 illustrates students' preference for individual digital tools for vocabulary learning. I used the same reporting scale as for the preference of individual vocabulary learning strategies, namely: 'High Usage' (3.5–5.0), 'Medium Usage' (2.5–3.49), 'Low Usage' (1.0–2.49).

The data in Table 22 reveal that online dictionaries, translation apps, online games and social networking web sites are among the most used digital tools for determining the meaning of a new word. Table 22 illustrates that visualization of a word is a highly rated strategy and looking up online for an image representing the meaning of a new word is a frequently used strategy. Likewise, learning new words from social networking as well as chatting in English are frequently used strategies by Romanian learners. These

findings are not surprising given students' age and interests. It also shows students' preference for learning while doing enjoyable activities, which mostly feature learning in online social contexts.

Table 22: Preference of individual digital tools for vocabulary learning

Digital tool no.	Item	M	SD	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
High usage (3.5 or above)						
Det	I search new words in an online dictionary on my computer/tablet.	3.56	1.15	17.9	24	58.1
Det	I look up for an image on the Internet which could represent the meaning of a word .	3.52	1.09	17	30.4	52.6
Medium Usage (M=2.5–3.49)						
Det	I use a translation app (e.g. Google translate).	3.48	1.21	22.1	24.7	53.2
Det	I learn and figure out the meaning of some words from online games.	3.39	1.16	21.9	29.2	48.9
Det	I search new words in an online dictionary on my phone.	3.31	1.28	26.5	24.7	48.8
Soc	I learn new words in English when using social networking (Facebook, Twitter etc.).	3.28	1.26	28.4	25.7	45.9
Det	I learn new words while browsing different webpages on the Internet.	3.27	1.32	30	22.2	47.8
Soc	I chat in English (even with Romanian speakers) when I am online.	3.15	1.29	34	25.2	40.8

Digital tool no.	Item	M	SD	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
Mem	I remember words encountered online if I access those pages again.	2.98	1.20	34.3	32	33.7
Met-Cog	I watch and listen to tutorials, presentations, talks/podcasts/ radio on subjects that I am interested in when I am online.	2.90	1.38	40.2	24	35.8
Soc	I ask a friend/classmate who is online about the meaning of a word.	2.62	1.19	47.6	28	24.3
Mem	I look up the pronunciation of a word in an online dictionary and I listen to it.	2.57	1.23	49.7	26.2	24.1
Det	I access the link to a new word in an online text which sends me to a definition of the word in the dictionary.	2.55	1.14	50.9	28.5	20.6
Low Usage (M=2.49 or below)						
Soc	I use new vocabulary through tasks I do on my device (e.g. take photos, record myself, make short videos and present them, role play, group conversations in English on WhatsApp etc.).	2.47	1.26	54.6	23.7	21.7
Met-Cog	I learn vocabulary through computer assisted tasks at school.	2.47	1.22	53	26.6	20.4
Det	I learn new words from apps I'm using.	2.25	1.21	62.2	21.4	16.3
Met-Cog	I play vocabulary games on my smartphone/iPad/computer (e.g. hangman, scrabble, memory, crosswords, word associations etc.).	2.25	1.21	61.3	22.7	16

Digital tool no.	Item	M	SD	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
Det	I use Thesaurus in Microsoft Word when I need synonyms or antonyms.	2.10	1.13	67.7	18.8	13.5
Det	I download vocabulary learning apps on my smartphone/tablet/iPad	1.89	1.04	74.8	16.2	9.1
Met-Cog	I test myself on new words by doing online vocabulary quizzes.	1.88	1.06	74.5	17.1	8.4
Met-Cog	I use the spell check in Microsoft Word.	1.87	1.17	73.3	15	11.6
Det	I access corpus websites (corpus is a collection of texts which are stored electronically where you can see the word's collocation, its frequency, the grammatical patterns in which the word appears, e.g. (e.g. http://corpus.byu.edu/bnc/).	1.85	1.04	76.3	14.8	8.9
Soc	I ask questions on various websites/discussion forums (e.g. https://answers.yahoo.com) as to the contexts in which I can use a word/expression.	1.79	1.00	76.7	16.8	24.3
Met-Cog	I do vocabulary exercises on various webpages on the Internet.	1.77	0.99	78.7	14.9	6.5
Mem	I save new words in a list on my phone.	1.71	1.00	81.1	10.8	8.1
Met-Cog	I use computer assisted vocabulary programs to learn new words (e.g. my vocabulary.com, vocabularynotebook.com, http://www.rosettastone.eu/etc.).	1.64	0.96	83	10.9	6.1

Digital tool no.	Item	M	SD	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
Mem	I put words I want to remember on my computer screen to remind me.	1.50	0.91	86.7	7.7	5.6
Mem	I record myself on my phone/ tablet saying the new word.	1.48	0.92	86.3	8.3	5.4

N=1137

On the other hand, the least used digital tools for vocabulary learning are: the vocabulary learning apps, the online vocabulary quizzes, the use of corpus websites, the online vocabulary exercises and the use of computer assisted vocabulary learning programs.

While discussing various technology enhanced tools for vocabulary learning, some participants in the focus groups expressed their familiarity with several online dictionaries, as the following quote shows: *"I use Webster Merriam dictionary – It's very useful, it even saves the words you have looked up in a list. Sometimes, when I am bored or I have nothing else to do I review the words. It is useful"* (participant F, male, 18, school N.B.). Likewise the following student expressed his preference for another dictionary while also showing the features he appreciates most about it: *"I use dictionary.com, which is a well-rated app, you see it has the word of the day, it tells you the differences between various words, such as 'holiday' and 'vacation', it gives you information about the history of a word"* (participant G, male, 15, school C.G).

Therefore, the majority of the students in the focus groups have installed a dictionary on their handheld device, which they use for looking up unknown words and for writing up words in a list as

the following quote suggests: *"I write new words on my phone so that I can go back to them"* (participant E, female, 16, school O.G). However, another student in the same focus group replied to this: *"If you don't go back to the words you write in that list, it just doesn't matter where you write them"* (participant C, female, 16, school O.G), suggesting that only relying on a device to remember the words for you, will not help you retain those new words.

Based on the observation of students in the focus groups, I noticed that most of them expressed more enthusiasm for word learning in online games, rather than online vocabulary exercises or apps. One of the reasons which accounts for this preference is that, according to most of the students, an online game is much more enjoyable than a vocabulary learning app, in a game they are able to learn words from context whereas in an app or in a vocabulary learning program, word learning is a more conscious process. The following quotes illustrate the participants' preference for online games:

> *"In a strategy game you learn loads of words, and you also learn them easily because you learn them while doing something that you really like. You like what you play, what you see in the game, the information about the words stays with you much longer thus"* (participant G, male, 15, school C.G).
>
> *"We tend to learn many words subconsciously through the games we play"* (participant E, male, 15, school O.G).

The questionnaire also included an open-ended question which asked students to list any other technology enhanced tools (e.g. games, websites, apps, dictionaries etc.) from which they have learnt new vocabulary. Table 23 illustrates the tools students have used.

Table 23: Digital tools used by students

Social media	Facebook, Twitter, Yahoo
Dictionaries	http://www.thefreedictionary.com http://dictionary.reference.com/ http://thesaurus.com/ http://www.urbandictionary.com/ https://translate.google.com/ http://www.bing.com/translator/, http://dictionary.cambridge.org/ http://hallo.ro/ http://www.wordreference.com/ http://www.merriam-webster.com/, http://www.macmillandictionary.com/
Apps	WhatsApp, Snapchat, Think, Elevate, Tumblr, Word Associations, Wordament, Pinterest, QuizApp, Hidden Objects, 4pics1word, Logo Quiz, Instagram, Talking Tom , Geo Quiz
Games	Wordswithfriends, League of Legends, Call of Duty, The Sims, World of Warcraft, Battlefield, Dota 2 Age of Empires, Minecraft, StarCraft, Candy Crush, Uncharted, GuildWars, Papa's Freezerias, Counter Strike, Clash of Clans, Titanfall, Grand Theft Auto, The Elder Scrolls, Smite, Heroes of Might and Magic SmallWorlds, Audition, TeamSpeak, Criminal Case, Need For Speed, Hay Day, Subway Surf, Castle Storm, Mystery Case
Websites and vocabulary programs	http://weheartit.com/ https://www.youtube.com/ http://www.ted.com/ http://www.ecursuri.ro/ http://latin-phrases.co.uk/ https://www.duolingo.com/ http://en.wikipedia.org http://www.reddit.com/ http://www.wattpd.com http://8fact.com/ http://www.myvocabulary.com/ http://www.rosettastone.eu/ https://www.vocabularynotebook.com http://www.mygrammarlab.com/, https://www.edx.org/ http://www.thesound-box.net/

Furthermore, the respondents also listed TV programs such as BBC and CNN, serials, blogs, forums, films without subtitles and online magazines as well as various PC programs like Photoshop, HTML etc. The students' lists of games or apps show that none of them is particularly vocabulary learning oriented, however, naming them in the questionnaire means that they recognize their learning value in terms of vocabulary. The use of these digital tools uncovers students' preference for learning words in a meaningful context, while playing a game, while reading something they enjoy or while using a thought-provoking app. All these digital tools provide not only a context, but also several opportunities to encounter new words in a more appealing way.

As to the participants' awareness and use of various apps for vocabulary learning (e.g. VN Vocabulary notebook, Phrasal Verbs machine, Word Challenge, My Word Book, Word Swipe, Word to Word Association, Idioms, Quizzitive etc.), I noticed that most of the respondents in the focus group were not very familiar with them. However, in each focus group there was a student who was familiar with at least one app as the following statements illustrate:

> *"I have used that app-Quizzitive – from Merriam-Webster dictionary - I have finished it actually, I used it mostly as a source of entertainment, when I had nothing else to do"* (participant F, female, 17, school O.G).

> *"I also used apps from Cambridge, as I was learning for my CAE and thought I could do something useful during the learning breaks as well"* (participant D, female, 18, school A.V).

The following quotes represent cases when some students downloaded an app for vocabulary with a clear learning objective in mind:

"I also used an app where you had to choose the word represented by the image, I don't remember the name of the app" (participant F, female, 18, school G.S); *"I also downloaded an app for expressions"* (participant H, female, 15, school G.S).

Other students have used apps as well, but not necessarily with a learning aim in mind, as the following student states: *"I used Stumble Upon, which is not really an app for vocabulary learning, but I learnt a lot of words from it, you have many chances to encounter new words there"* (participant A, female, 18, school G.S).

On the other side, other students look at apps as sources of entertainment, which is also shown by the following quote: *"When I'm bored I do vocabulary quizzes*" (participant G, female, 16, school O.G).

As to computer assisted vocabulary learning programs, most of the students' responses showed that they are not familiar with such programs. Only two participants from schools N.B and O.G reported having heard of *Rosetta Stone* and *Speak English*.

With regard to the participants' use of vocabulary exercises on specific websites, students' opinions vary as well. I identified students who have prepared for a language exam and have therefore used the resources on various websites, those who did at some point some online exercises, and those who have not heard or used such websites:

> *"I did some vocabulary exercises. I liked the fact that I got immediate feedback after I finished the exercise, it's much more accessible that way, you don't need to look up in the dictionary as the website tells you whether it's correct or not or what is wrong"* (participant B, female, 15, school G.S).

"When I prepared for the CAE, somebody told me about the website and I did some practice there, also vocabulary related" (participant F, male, 16, school N.B).

The data from the focus groups showed that most of the students' use of digital tools in their vocabulary learning is generally limited to the use of online dictionaries, games, a few apps and various webpages but also to the use of CMC, the students having the possibility to communicate in English and use the vocabulary learnt. When discussing students' use of CMC, one student pointed out that *"in the online environment, you don't even realize when you switch the language"* (participant D, female, 17, school A.V), showing there is a connection between the context of encountering new words and the use of language encountered in the online context.

5.4.1. Differences in the use of digital tools by academic profile, language program, gender and age

This section answers RQ 5, namely, *How does the students' use of digital tools for learning vocabulary vary across their age, academic profiles, language program and gender?* In order to answer this research question I used both descriptive and inferential statistics.

5.4.1.1. Use of digital tools by academic profile

The data in Table 24 report descriptive statistics for the use of digital tools by academic profile. Although there are differences in means between the four groups, the difference between them is not really very much indicating that in fact students in the four profiles use digital tools in a similar way

Table 24: Use of digital resources by academic profile

Academic profile	M	SD	n	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
Humanities	2.55	0.60	265	41.9	50.6	7.5
Science	2.53	0.52	242	45.9	49.6	4.5
Math-ICT	2.45	0.52	384	50.5	47.4	2.1
Economic-Technical	2.40	0.57	265	54.3	42.3	3.4

As for percentages, it is interesting to notice that in terms of high usage, students enrolled in the humanities use more digital tools than students enrolled in the other profiles. This may show that students with an interest in foreign language learning are also more interested in using digital tools for vocabulary learning.

Table 25 indicates the results of One-Way ANOVA for the use of digital resources for vocabulary learning when participants were grouped by academic profile.

Table 25: Use of the digital resources by academic profile

Humanities		Science		Math-ICT		Economic-Technical		F	Sig.	ANOVA Performed	Post-Hoc Test Used	Difference*
M	SD	M	SD	M	SD	M	SD					
2.55	0.60	2.53	0.52	2.45	0.52	2.40	0.57	4.58	0.003	One-Way	Games-Howell	E-T < H ; E-T < S
n=265		n=242		n=384		n=265						

* $p < 0.05$

The difference in overall tools used by humanities, science, math-ICT and economic-technical students was statistically significant

(F=4.58, p=0.03). Post hoc comparisons using Games-Howell test showed that humanities students use more often digital tools for vocabulary learning (M=2.55) than economic-technical students (M=2.40). Results of the post hoc test also showed that science students use more frequently digital tools for vocabulary learning (M=2.53) than economic-technical students (M=2.40). The other comparisons were not significant.

5.4.1.2. Use of digital tools by language program

Descriptive statistics results presented in Table 26 uncover that students following a bilingual program have a medium usage of digital tools, followed by intensive English students whereas students enrolled in a normal language program have a low usage of digital tools.

Table 26: Use of the digital resources by language program

Language program	M	SD	n	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
Intensive English	2.53	0.58	433	46.2	48.5	5.3
Bilingual	2.57	0.54	119	38.7	54.6	6.7
Normal	2.43	0.53	604	52	45.2	2.8

The percentages also show that students following a bilingual program use more digital tools than students following an intensive or normal program, however the most important difference in the use of digital tools is between intensive-bilingual students and the students following a normal program. This difference indicates that students allocating more time for learning a foreign language

also tend to use more digital tools than students allocating less time for this.

Table 27 shows results of One-Way ANOVA analysis for use of digital resources when participants were grouped by language program.

Table 27: Use of digital resources by language program

Intensive English		Bilingual		Normal		F	Sig.	ANOVA Performed	Post-Hoc Test Used	Difference*
M	SD	M	SD	M	SD					
2.53	0.59	2.57	0.54	2.43	0.53	6.12	0.002	One-Way	Games-Howell	N < I; N < B
n=433		n=119		n=604						

*p < 0.05

The difference in overall digital tools use for the three language programs was statistically significant (F=6.12, p=0.002). Post hoc comparisons using Games-Howell test showed that students in an intensive English language program use digital tools for vocabulary learning more frequently (M=2.53) than students in a normal language program (M=2.43). Post hoc comparisons also showed that students in a bilingual language program use digital tools for vocabulary learning more frequently (M=2.57) than students in a normal language program (M=2.43).

5.4.1.3. Use of digital tools by gender

Table 28 indicates descriptive statistics for the differences between both sexes as to digital tools usage showing that female students use more digital tools than males.

Table 28: Use of the digital resources by gender

Gender	M	SD	n	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
Male	2.44	0.57	467	51.6	44.5	3.9
Female	2.51	0.54	689	46.3	49.3	4.4

Table 29 shows results of One-Way ANOVA analysis for the use of digital resources when participants were grouped by gender.

Table 29: Use of digital tools by gender

Male		Female		F	Sig.	ANOVA Performed	Difference*
M	SD	M	SD				
2.44	0.57	2.51	0.54	4.34	0.03	One-Way	M < F
n=467		n=689					

*p < 0.05

The difference in overall digital tools use between male and female students was statistically significant (F=4.34, p=0.03), with females reporting a more frequent use of digital tools for vocabulary learning (M=2.51) than males (M=2.44).

5.4.1.4. Use of digital tools by age

As for the differences in the two age groups, the descriptive results in Table 30 indicate that both groups have a low usage of digital tools for vocabulary learning.

Table 31 shows results of One-Way ANOVA analysis for use of digital resources when participants were grouped by age.

Table 30: Use of the digital resources by age range

Age range	M	SD	n	Percentage of low usage (1.0–2.49)	Percentage of medium usage (2.5–3.49)	Percentage of high usage (3.5–5.0)
14–16	2.49	0.52	621	47.8	49	3.2
17–19	2.48	0.59	535	49.2	45.6	5.2

Table 31: Use of the digital resources by age range

14–16		17–19		F	Significance	ANOVA Performed
M	SD	M	SD			
2.49	0.52	2.48	0.59	0.03	0.84	Welch
n=621		n=535				

The difference in overall digital tools use was not statistically significant for these two age groups (F=0.03, p=0.84). This result suggests that both age groups are similar in terms of frequency of use for digital tools.

5.5. Students' attitudes towards the use of technology enhanced tools for vocabulary learning

This section answers RQ 6, namely: *What are the students' attitudes towards the use of technology-enhanced tools in their vocabulary learning?* In order to determine the kind of attitudes students have towards learning English vocabulary with digital resources, the rating for all the 14 items in the attitudes scale were summed. The maximum mark was 70 and the minimum mark was 14. Based on this range, the participants' scores were divided into three levels to determine

the kinds of attitudes they have towards learning English with digital resources. The score range for the three levels were as follows: unfavorable attitudes (score range 14–32), neutral attitudes (score range 33–51), favorable attitudes (score range 52–70).

In Table 32 the frequencies of use also reveal that 71.8% (n=777) of the participants have neutral attitudes, 24% (n=346) have favorable attitudes, whereas only 4.3% (n=4.3) have an unfavorable attitudes.

Table 32: Students' overall attitudes towards the use of technology for vocabulary learning

Type of attitude	Percentage	n
Unfavorable: 14–32	4.3	50
Neutral: 33–51	71.8	777
Favorable: 52–70	24.0	346

N=1173

Furthermore, the data in the focus group explicate students' neutral attitudes towards the use of technology enhanced tools for vocabulary learning. Students' neutral attitudes indicate that they are neither in favor nor against the use of technology enhanced tools for vocabulary learning.

The participants mentioned that one of the reasons for which they do not look at digital tools for vocabulary learning very enthusiastically is because nobody recommended their use for language learning. For example the following quote suggests this: *"Also a reason which determines us using or not using an app is whether it is or not a recommended app. If nobody recommends us any app, it is very unlikely to search it by ourselves. We sometimes don't know what to*

download, there are so many apps up there" (participant D, male, 15, school C.G.).

Likewise, most of the students in the focus groups also remarked that there might be more chances to get familiarized with apps if the school recommended: *"We don't go home and start looking for apps usually. If somebody qualified shows them to us, then there are more chances to use them"* (participant F, female, 18, school G.S)./ *"We would probably use such apps if the teacher recommended them, if they told us exactly what apps to download. I think it would add more variety to our lessons, learning, maybe"* (participant D, male, 17, school N.B).

As a result of the focus group discussions, but also based on my observations, most of the students in these focus groups believe that it is also the school's responsibility to promote the possibilities offered by technology in their learning as the following quote shows: *"I also think that it is the school which should take care of this aspect. When you go home from school, there is little chance that you would start looking for a learning app" (participant A, female, 18, school G.S).*

As to the features of various digital tools the participants commented on, the majority of them pointed out that in apps or even in some computer assisted vocabulary programs words appear in isolation, similar to words in a word list, but on a screen, therefore this would not stir their interest in particular, emphasizing the fact that the apps they are familiar with are not very stimulating: *"We don't usually learn new words from apps designed for learning words, we learn them from context. We do learn words from apps but not from those vocabulary learning apps"* (participant E, male, 15, school C.G).

Additionally, using an app is very similar to conscious learning of vocabulary. One participant from school C.G asserted: *"When*

you download an app, then you consciously want to learn something. And we don't want to consciously learn something in our free time" (participant F, male, 17, school C.G). Another participant also supported this statement by saying: *"Students will not use vocabulary learning apps in their free time let's say as they don't want any 'conscious learning after school"* (participant B, male, 16, school C.G).

Also some participants underlined the fact that they perceive these digital tools mostly as sources of entertainment, rather than learning. When they use their phone or tablet, their mind is not focused on learning anything. Even if they used an app, they would still be tempted to do something else, as the following examples show: *"I am tempted to do something else on the PC or tablet, while doing exercises, for example, chat with friends, play a game, I'm not focused to learn"* (participant B, female, 16, school O.G)./*"I think the temptation would be too big, we can't generally be on one app only, we would be tempted to use others as well, to entertain ourselves"* (participant D, male, 16, school C.G).

On the other hand, some participants also put forward the idea that no matter what resources one uses, one still needs to allocate time for them. Therefore, even though students have access to technology enhanced tools, it is completely useless without the individual's intent and determination to learn.

> *"It would be interesting to learn from apps, but we probably wouldn't allocate enough time to review the words, so then it is not very helpful"* (participant G, male, 16, school O.G).
>
> *"Apps might be helpful, if we actually used them"* (participant C, female, 17, school A.V).

Furthermore, another aspect which most of the participants made reference to was the connection between personal learning style and the use of digital devices: *"I think the matter of 'usefulness' depends again on the type of person you are. Maybe some people learn better from apps, maybe others learn better from listening to music"* (participant A, female, 15, school G.S).

In sum, vocabulary learning apps do not necessarily represent a novelty or an attraction for students, they could be beneficial though if students actually used them. The majority of the participants noticed the visual features of the apps, which they considered quite practical. Yet, their use depends on the type of app, on personal learning style and also on the teachers' recommending it or not. Likewise, most of the participants in the focus groups do not consider apps as necessary for vocabulary learning, they are similar to a source of entertainment.

5.5.1. Differences in attitudes by academic profile, language program, gender and age

The following sections answer RQ 7, namely, *How do the students' attitudes vary across gender, age, language program, academic profiles?* Descriptive and inferential statistics were used in order to uncover the differences in attitudes.

5.5.1.1. Differences in attitudes by academic profile

Overall, the descriptive results show that students in all profiles have neutral attitudes towards learning English with digital tools. The percentages reveal that science students (32.7%) have more favorable attitudes than students in the economic-technical profile

(30.4%). Also students enrolled in a math-ICT profile (28.8%) have more favorable attitudes than students enrolled in the humanities (26.5%).

Table 33: Students' attitudes towards learning English vocabulary with digital resources by academic profile

Academic profile	M	SD	n	Percentage of students with unfavorable attitudes	Percentage of students with neutral attitudes	Percentage of students with favorable attitudes
Humanities	46.76	6.9	264	2.3	71.2	26.5
Science	47.57	6.19	260	1.5	65.8	32.7
Math-ICT	46.64	7.09	389	4.1	67.1	28.8
Economic-Technical	45.31	9.24	260	9.2	60.4	30.4

Table 34 shows results of Welch ANOVA analysis for students' attitudes towards learning English vocabulary with digital resources when participants were grouped by academic profile.

Table 34: Students' attitudes towards learning English vocabulary with digital resources by academic profile

Humanities		Science		Math-ICT		Economic-Technical		F	Sig.	ANOVA Performed	Post-Hoc Test Used	Difference*
M	SD	M	SD	M	SD	M	SD					
46.76	6.90	47.57	6.19	46.64	7.09	45.31	9.24	3.63	0.01	Welch	Games-Howell	E-T < S
n=264		n=260		n=389		n=260						

* $p < 0.05$

The difference in overall attitudes was statistically significant for the four academic profiles (F=3.63, p=0.01). Post hoc comparisons

using Games Howell test showed that students from the science profile had more favorable attitudes (M=47.57) than students from the economic-technical profile (M=45.31). The other comparisons were not significant.

5.5.1.2. Differences in attitudes by language program

The descriptive results in Table 35 indicate as well that students in all language programs have overall neutral attitudes towards learning vocabulary with digital tools.

Table 35: Students' attitudes towards learning English vocabulary with digital resources by language program

Language program	M	SD	N	Percentage of students with unfavorable attitudes	Percentage of students with neutral attitudes	Percentage of students with favorable attitudes
Intensive English	46.62	6.77	441	2.7	67.6	29.7
Bilingual	48.15	6.83	118	1.7	63.6	34.7
Normal	46.24	7.95	614	5.9	65.8	28.3

As shown in Table 35, the students enrolled in a bilingual program have more favorable attitudes (34.7%) than students in the intensive English program (29.7) or students following a normal program (28.3%). This difference may indicate that an interest in language learning may influence the attitude one has on learning vocabulary with digital tools.

Table 36 shows results of One-Way ANOVA analysis for students' attitudes towards learning English vocabulary with digital resources when participants were grouped by language program.

Table 36: Students' attitudes towards learning English vocabulary with digital resources by language program

Intensive English		Bilingual		Normal		F	Sig.	ANOVA Performed	Post-Hoc Test Used	Difference*
M	SD	M	SD	M	SD					
46.62	6.77	48.15	6.83	46.24	7.95	3.3	0.03	One-Way	Games-Howell	N < B
n=441		n=118		n=614						

The difference in overall attitudes was statistically significant for the three language programs (F=3.30, p=0.03). Post hoc comparisons using Games-Howell test showed that students in a bilingual language program have more favorable attitudes (M=48.15) than students in a normal language program (M=46.24). The other comparisons were not significant.

5.5.1.3. Differences in attitudes by gender

Descriptive results in Table 37 report that both sexes showed neutral attitudes towards learning English with digital tools.

Table 37: Students' attitudes towards learning English vocabulary with digital resources by gender

Gender	M	SD	N	Percentage of students with unfavorable attitudes	Percentage of students with neutral attitudes	Percentage of students with favorable attitudes
Male	44.5	8.35	465	8.0	70.1	21.9
Female	47.94	6.41	708	1.8	63.7	34.5

The percentages in Table 37 indicate some interesting differences between the two sexes. For example only 1.8% females have un-

favorable attitudes compared to 8% males. Also, females (34.5%) have more favorable attitudes than males do (21.9%). Although, overall, both sexes have neutral attitudes, the percentages show that females have slightly more favorable attitudes than males do towards learning English with digital resources.

Table 38 indicates results of Welch ANOVA analysis for students' attitudes when participants were grouped by gender.

Table 38: Students' attitudes toward learning English vocabulary with digital resources by gender

Male		Female		F	Significance	ANOVA Performed	Difference*
M	SD	M	SD				
44.50	8.35	47.94	6.41	56.76	0.00	Welch	M < F
n=465		n=708					

* $p < 0.05$

The difference in overall attitudes was statistically significant between male and female students (F=56.76, p=0.00), with females reporting more favorable attitudes (M=47.94) than males (M=44.50).

5.5.1.4. Differences in attitudes by age

The data in Table 39 show that both age groups (14–16, M=46.76, 17–19, M=46.36) have neutral attitudes towards learning English with digital tools.

Table 40 shows results of One-Way ANOVA analysis for students' attitudes towards learning English vocabulary with digital resources when participants were grouped by age range.

Table 39: Students' attitudes
towards learning vocabulary with digital resources by age

Age range	M	SD	N	Percentage of students with unfavorable attitudes	Percentage of students with neutral attitudes	Percentage of students with favorable attitudes
14–16	46.76	7.53	631	4.4	64.8	30.7
17–19	46.37	7.32	542	4.1	67.9	28

Table 40: Students' attitudes
towards learning English vocabulary with digital resources by age

14–16		17–19		F	Sig.	ANOVA Performed
M	SD	M	SD			
46.76	7.53	46.37	7.32	0.81	0.36	One-Way
n=631		n=542				

The difference in overall attitudes was not statistically significant for these two age groups (F=0.81, p=0.36). This result suggests that the 14–16 group and 17–19 group have similar attitudes towards learning English vocabulary with digital resources.

CHAPTER 6

DISCUSSION

This chapter discusses the main findings from the current research project integrating results with the available findings in the literature and my own interpretation of the findings. The chapter has three main sections. The first section frames an integrated picture of the vocabulary behavior of Romanian high school students trying to explicate the significance of the findings within this particular cultural context. The second section offers a comprehensive picture of how Romanian students integrate digital tools in their vocabulary learning focusing also on their attitudes towards using these tools. The third section focuses on the differences in vocabulary strategy use and digital tools use across the four independent variables, gender, age, academic profile and language program.

6.1. Framing the vocabulary learning behavior of Romanian high school students

6.1.1. Types of vocabulary learning strategies used by Romanian students

This section presents the most significant findings as to the vocabulary learning strategies used by Romanian high school students and it discusses their meaning in the light of the literature but also

in the light of the context in which the study took place. In the current study I analyzed the quantitative data from two perspectives. First of all, using Schmitt's (1997) taxonomy, vocabulary learning strategies were grouped by type as determination, social, metacognitive, memory and cognitive strategies. Secondly, I analyzed the frequency of each individual vocabulary learning strategy in order to determine which are the most and the least used by Romanian high school learners.

When grouped by types, the data revealed that Romanian students mostly prefer social strategies (M=3.01, SD=0.65). Therefore, using new words in conversations and chats, practising the meaning of new words during the activities in the English lessons, with their friends or classmates are among the most preferred strategies. These results do not echo the results of Dóczi (2011), who investigated the vocabulary learning strategies used by high school and university students in Hungary and found that the social and the metacognitive strategies were the least preferred by Hungarian students. Likewise, in two studies taking place in an Iranian context (Arjomand and Sharififar, 2011, Amirian and Heshmatifar, 2013), the results showed that students used least metacognitive and social strategies. This contrast with previous studies may be due to the fact that the participants in this study were high school students, who interact on a daily basis with their classmates or language teachers whereas in Arjomand and Sharififar (2011) and Amirian and Heshmatifar (2013) the participants are university students. However, I believe that another reason which explains this difference is cultural background as explained also by Riazi and Rahimi (2003). In their study on the use of general language learning strategies among

EFL Iranian students, the results also showed a low usage of social strategies.

The determination strategies (M=2.85, SD=0.55) follow the social ones in students' frequency of use. Romanian high school students discover the meaning of a new word by frequently using the following strategies: guessing from context, looking up the word in the dictionary, associating the word with a picture and thinking of any similar words which could mean the same things. Although Schmitt's (1997) study was set in a Japanese context, the participants in his study also reported to be using contextual guessing, a bilingual dictionary and the asking someone for the meaning of a word strategy. Likewise, these results also echo with Gu and Johnson's (1996) who reported that the most frequently used strategies were the guessing from context and dictionary use. In the current study the guessing from context strategy (M=3.56, SD=.870) as well as the association of a word with a picture (M=3.56, SD= 1.037) are the most frequently used determination strategies whereas the individual strategies of looking up for a word in the dictionary (M=3.00, SD=1.233) and the thinking of a similar Romanian word (M=3.28, SD=1.120), have a medium usage.

These similarities in the use of determination strategies across different cultural backgrounds are not very surprising given that determination strategies are the 'first' stage one takes in learning new vocabulary. Therefore, although one may not use other types of strategies, it is very unlikely not to use determination strategies.

Contrary to the findings in Schmitt (1997), Romanian high school students use L1 cognates when trying to determine the meaning of a new word. This is in line with Kellerman (1977) who asserted that

learners transfer only lexical items which they consider transferable given the similarity between certain structures. Furthermore, this outcome also echoes the findings in Stoffer's (1995) study who uncovered that the most used strategies were the ones which create mental linkages, mostly the one relating an L2 word with and L1 word.

An interesting outcome emerging from the focus group discussions was the fact that the use of determination strategies depends on how students have encountered the word and also on how useful they perceive the word. For instance, if students think they are likely to need that word in the future, they consider it useful. Also, as expressed by most of the participants in the focus groups, if they do not consider the new word necessary for understanding a text, they would most likely ignore it or try to figure out the meaning in the context in which it appears. However, it is necessary to mention that this behavior occurs mostly with words encountered incidentally, whereas for words encountered during regular lessons, note taking and the looking up in a dictionary are more common. Therefore this implies that there are two ways of approaching determination strategies, depending on the context of encountering. In effect, strategy use is likely to be highly context dependent, learners choosing and using different determination strategies depending on how they encountered the word. This means that questionnaires investigating levels of strategy use should also include information related to context.

The data revealed that metacognitive strategies (M=2.58, SD=0.79) follow the determination strategies in frequency of use. This type of strategies gives students maximum exposure to the foreign language

(Schmitt, 1997). In the context of the current study, this exposure is mostly of an auditory-visual nature. According to the data, using English media is the second most preferred individual vocabulary learning strategy. This finding is not very surprising in the cultural context where the study took place. As explained in chapter two, Romanian students are exposed to movies and songs in English on a regular basis. The fact that movies are not dubbed and that students themselves confirmed in the focus groups that they prefer watching movies without subtitles, explains why this strategy is so popular. This strategy is also associated with the idea, also stated by the majority of the students during the focus groups, that they prefer learning while doing an enjoyable activity, such as listening to music or movie watching.

The results in the current study indicate that Romanian students attempt to manage their vocabulary learning by benefitting from different incidental learning opportunities. It also shows that these participants do not rely extensively on the teacher for learning vocabulary in English and it suggests that an important part of their vocabulary has been learnt outside the classroom.

In contrast, spaced repetition of words, testing oneself with new words, doing vocabulary exercises are metacognitive strategies which have a low usage among Romanian students. As the data indicate, vocabulary exercises are used little by the students in this particular context and their use is limited to classroom learning only. During the focus group interviews, the participants explained that classroom practice exercises are enough for them to retain the meaning of words learnt in class. Likewise, the spaced repetition strategy is only used before tests, according to the participants in the focus groups.

This suggests that learners in this context may not necessarily feel very motivated to use these strategies outside the classroom environment and that they mostly associate them with classroom learning.

Cognitive strategies (M=2.46, SD=0.75) are the fourth most frequently used. These are strategies which require an effort on the part of the learner but also training in their use. Copying the word several times, keeping a vocabulary notebook and making word cards are examples of cognitive strategies which have a low usage in the context of the current study. In Schmitt's (1997) taxonomy, cognitive strategies are rather similar to memory strategies as they include mechanical means of word learning, such as flashcards, vocabulary notebook and repetition. The students in this study rarely use written and verbal repetition, flashcards or other study aids. One reason for this could be that these strategies are more appropriate for lower levels as according to my experience as both a student and a teacher in this context, these strategies are mostly taught by teachers in primary and secondary school, not in high school.

In Amirian and Heshmatifar (2013), whose study was conducted in an Iranian context, cognitive strategies appear to be the second most used. Their study was conducted with 74 EFL university students majoring in TEFL and English Literature. Students' academic profiles suggest that they are highly interested in language learning, therefore, their motivation to use cognitive strategies requiring an effort on the part of the learner is highly justified. It may be the case that a particular interest and motivation in vocabulary learning enhances the use of more cognitive strategies.

Memory strategies (M=2.43, SD=0.51) are the least used. Although researchers (Nation, 2001) have identified the usefulness of certain mnemonic techniques, the participants in the current study do not favor them. One reason could be that, according to the participants in the focus groups, they were simply not familiar with them. Also, I personally came across several mnemonic techniques during my doctoral research, not before or during my teacher training. It may be the case that teachers in this particular context are not aware of these strategies. Based on my teaching practice, my students only started using word cards when I taught them how to make them and used them in classroom as well. I believe that except for rote memorization of words, memory strategies are to be taught in the language classroom, otherwise there is little chance students use them on their own.

However, one particular memory strategy, *If the word has an impact on me I simply remember it*, has been found to be the most used one by Romanian students. This is a rather interesting outcome as it opens up new lines of research as to what students understand by impact. 'Impact' could refer to the context in which the learners encountered the word; secondly it could refer to the word form, which may seem interesting to students; thirdly 'impact' may simply involve the way the word was taught, for example if the teaching of vocabulary is memorable, then it may have an impact on the learners. Moreover it is a strategy which values the importance of context in encountering a new word but also a memory strategy which implies no supplementary effort on the part of the learner.

What is particular about the vocabulary behavior of these students is that they seem relatively aware of their vocabulary learning although the overall tendency is that vocabulary learning is not perceived as something which should require too much effort on the students' side, but rather an activity which should be done in a more enjoyable way.

The data indicated that students expressed their preference for situations in which vocabulary is learnt incidentally, in meaningful contexts. In order for word retention to occur, the context must be interesting, it must have an impact on the student. Yet, one single encounter with a word is not enough and the participants in the current study are aware of this, as expressed in the focus group discussions. The results are somewhat in line with Gu and Johnson (1996), who also considered that despite the fact that there are numerous VLS students could use, students actually make use of few of them. Interestingly, Romanian students do not seem to have a large repertoire of VLS in use and only tend to use those strategies they are familiar with or the ones which seem more natural and require less effort on their side.

6.1.2. The most and least preferred vocabulary learning strategies used by Romanian students

Whereas the previous section focused on discussing the types of vocabulary learning strategies used by Romanian students, this section focuses on highlighting the most and least used individual vocabulary learning strategies. Table 41 shows the most and least used vocabulary learning strategies.

Table 41: Most and least used vocabulary learning strategies

Most used individual vocabulary learning strategies	Least used individual vocabulary learning strategies
If the word has an impact on me I simply remember it	I write the new word in a vocabulary notebook
I remember new words when I encounter them again in movies and music	I link the word to one that rhymes with it; I group the new word in 'word families'
I guess the meaning of the new word from the context in which it appears	I break down the word into parts and see if I know any of them like 'audi' means 'sound'
I figure out the meaning if I see a picture of it	I use semantic feature grids
I ask the teacher for the meaning of the word	I try to remember the word's affixes and root separately
I ask a classmate/friend	I make a card with the new word; I group words together within a 'storyline'
I write the word in my classroom notebook in case I need it in the future	I arrange the new words using graphic organizers
I remember the word by recalling the context/sentence/example where I encountered	I write the new words on a wall, door, whiteboard, pin up post so that I can always see them
I connect the word with similar words in Romanian or from other foreign languages I know (e.g. coffee-cafea)	I underline the initial letter of the word.

The most used vocabulary learning strategies by Romanian students define both the vocabulary learning behavior of students in this particular context, but also the behavior of students learning a foreign language in a formal school environment. What is interesting is that the use of a bilingual or monolingual dictionary is not among the most used strategies, students having the words explained in the classroom by the teacher or other classmates. As for the words encountered outside the classroom, as previously

explained in this chapter, their looking up depends on the context of encountering.

Although Nation (2011) believes that several intentional strategies should be used by students, such as word cards, studying word parts, dictionary use, the results showed that in the case of Romanian students, these are not used to a large extent. It is clear that the participants in the current study do no focus on strategies related to grouping, imagery, association, the Peg or Loci method. According to the participants in the focus groups, they have not been trained to use these strategies.

Kovanen (2014) in her study on the use of vocabulary learning strategies employed by high school Finnish students found that the most frequently used strategies were using wordlists, English media, guessing while reading, guessing based on other known languages, using a dictionary to find a meaning and repeating words out loud. These strategies are also preferred by Romanian high school students. In contrast, the least favored strategies by Finnish students were pasting post-its with English names, acting a word's meaning, keeping a diary/notebook on new vocabulary items, making mind maps, taking notes, underlining words in a text. These outcomes indicate that there are similarities between Finnish and Romanian students in vocabulary strategy use given that both studies investigated the same age groups in a western context. In effect, both Romanian and Finnish students prefer social and determination strategies and have a low usage of cognitive and memory strategies. Although Finnish students acknowledge the usefulness of these least used strategies, they do not use them.

The overall results indicate that Romanian students do not necessarily have a very structured approach of vocabulary learning, as they neither use a wide range of strategies nor seem very interested in the use of vocabulary learning strategies, as I observed during the focus groups. This might be a consequence of the fact that most often vocabulary learning is left to the students themselves.

To sum up Romanian students rely mostly on the context in which they encountered the new word or on other information which might help them retain the word. Apparently, Romanian students do not consider vocabulary learning as a very complicated endeavor and do not think they should invest too much time on it, as they believe vocabulary learning happens anyway, provided they encounter the new word in more than one context and provided they also try to use the new word in different contexts. Based on the data in the study, Romanian high school students do not invest a considerable amount of time on deliberate vocabulary learning outside the classroom, favoring the incidental opportunities to a great extent. Within a global context, these incidental opportunities are mostly provided by the English media.

The following section looks at the way Romanian students use their handheld devices and PCs in their English vocabulary learning.

6.2. Romanian students' use of digital tools for vocabulary learning and their attitudes towards the use of digital tools in vocabulary learning

Along with students' use of vocabulary learning strategies, the current research also investigated how students use CALL and MALL in their learning of English vocabulary and their attitudes towards the use of CALL and MALL. From a total of 1,239 participants, 66.2% have neutral attitudes, 29.5% have favorable attitudes and only 4.3% have an unfavorable attitude. Students differ in their degree of motivation when it comes to embracing new technologies (Rogers, 1962) and learners react differently to mobile technologies and adopt them at various speeds (Stockwell, 2007).

Within the context of technology enhanced learning, the term 'ubiquitous learning' refers to learning using smart phones, tablets, laptops, in general handheld devices emphasizing the idea that by using these devices, learning can occur anytime, anywhere. Accordingly, ubiquitous learning is embedded in the everyday environment occurring around users whether or not they are aware of it (Huang et al., 2011). Vocabulary learning through the use of MALL has been researched in studies by Levy and Kennedy (2005), Thornton and Houser (2005), Stockwell (2007). Yet, as Steel (2012) pointed out, only Song and Fox (2008) reported on the students' use of personal devices to learn new vocabulary. This means that a comparison with other studies investigating students' use of technology tools is rather limited and that this section focuses mostly on discussing how Romanian high school students engage with technology in

order to learn vocabulary and the features that define their engagement with technology for educational purposes.

The data indicated that Romanian high school students mostly use determination digital strategies (M=2.83), followed by social digital strategies (M=2.63), memory digital strategies (M=2.05) and metacognitive-cognitive digital strategies (2.05). Online dictionaries, translation apps, online games, social networking and various online extensive reading and listening activities are the most frequently used resources. According to the data, the respondents learn or practise new words during various online activities, suggesting that students prefer learning while doing something they like. All these online based learning activities have in common their social interactive nature, students expressing an interest in learning while actively interacting with another student or with the device itself. In the current study, the participants' preference for various online tools for learning is in line with the idea that different resources means that content can be represented in various ways (e.g. text, audio, video) implying that learners have the possibility to choose the representation which best matches their learning style or preference (Hill, Song and West, 2009).

The tools students have reported to use in the survey do not necessarily need teacher guidance and they are usually used outside the class, such as the various forms of computer-mediated-communication (e.g. chatting on various devices and programs and email). There are two types of CMC tasks, asynchronous email/text messages and synchronous communication where real time communication takes place like a conversation in an online environment. In the context of the current study, the participants frequently use the

latter type as suggested by their 'gamified' and social networking behavior. These forms of communication are mostly perceived as entertaining activities but the students in the focus groups also claimed to have learning outcomes as they often interact with other users in English. These results indicate students' preference for learning while doing something they enjoy or learning while interacting with others.

As to the use of online glossing by students in this study, the data revealed that Romanian students have a medium usage of them, very close to the low usage range. Although online glossing has been researched in terms of its effectiveness for language learning compared to paper-based glossing (Taylor, 2009), the current results indicate that in effect students may not be aware as to how to learn vocabulary using online glossing. One of the reasons which accounts for this finding is that students do not have too many opportunities to use online glossing, as they stated during the focus groups. From my user experience, online glossing works best on an electronic reader but also on certain foreign language websites. Given the fact that students in the focus groups have not mentioned the use of electronic readers or of any websites containing glosses, their medium to low usage is justifiable.

Also, despite the fact that there is a plethora of available computer assisted vocabulary programs and mobile assisted vocabulary learning apps, the data uncovered that Romanian high school students have a low usage of computer assisted vocabulary programs and of mobile assisted vocabulary learning apps. The students in the focus groups explained their lack of interest in vocabulary learning apps or dedicated CAVL programs by stating a preference for sub-

conscious learning of words while using a digital tool. They pointed out that once they have downloaded an app, they would deliberately set their mind to learn something, which they would rather not do in their free time. Also, the data in the focus groups revealed that students' attitudes are partially determined by the fact that students are not aware of any apps or programs which could really have an impact on their language learning and that they do not know how to make a good selection among the numerous available apps.

These outcomes suggest that although students in this context have access to these tools and use them on a regular basis, no CALL or MALL learning culture has been set up in this particular cultural context. The findings concerning students' attitudes and also overall use of digital tools for learning vocabulary in English echo Ushioda (2013). She claims that it is very unlikely that students should engage with digital tools and see them as learning tools, not as content delivery tools, as long as there isn't a culture associated with the use of CALL and MALL in the foreign language classroom.

Chen (2013) conducted an action research study investigating how 10 Chinese university students majoring in English use tablets for informal language learning and also their attitude towards mobile technology. The results of Chen's (2013) study pointed out that the participants believed that tablets are effective for language learning and that students were quite certain that mobile technology could impact on their language learning. However, Chen's (2013) study also revealed that it is not enough for students to own the devices, but also to be guided methodologically as students may simply not be aware of how to combine language learning and technological affordances. The results of Chen's study (2013)

regarding students' positive attitudes as to the use of MALL are in line with Başoğlu and Akdemir (2010) and Ozok et al. (2008). One possible explanation which accounts for the differences in the current study and Chen's (2013) study is the fact that the participants in Chen's (2013) study were majoring in English, having thus a real interest in using all the resources available to improve their language learning. Also, given the fact that it was an action research study, the participants were given the tablets and instructed to use them for English study whenever and wherever they wanted. Therefore, unlike the participants of the current study, Chen's participants had clear learning purposes in mind being part of an action research study.

As far as students' use of computerized vocabulary exercises, the current study is not in line with the results from Allum's (2004) study, where students were reported to be highly motivated by the use of CVE. However, Allum's (2004) study was experimental, therefore it is likely that novelty played a role in enhancing students' motivation. Also Allum (2004) asserted that these exercises could enhance students' motivation if integrated with classroom work. The students in the current study see CVE as computer versions of paper based exercises and the data indicated students' low interest in them. One reason which accounts for students' low usage of CAVL programs or websites with vocabulary exercises, corpus websites, apps for vocabulary learning, according to the participants in the focus groups, is that they do not know how to effectively use these resources for learning. One of the reasons which may explain this outcome is the lack of learner training in the use of these resources and lack of interest in learning vocabulary using

these tools. Although the current paper does not provide any data on students' use of technology during regular English lessons, the results imply somewhat that in Romanian public schools a more traditional way of explicit vocabulary learning and teaching is still well and alive, Romanian students having little exposure to the use of digital tools during regular classroom instructions.

Although computer and mobile assisted vocabulary learning provide both explicit and incidental learning opportunities, Romanian students expressed a preference for the incidental opportunities in a digital environment, as new vocabulary appears in a more meaningful context. Therefore in the context of computer and mobile based technologies, incidental vocabulary learning is more contextualized as learners practise the meanings of new words in richer contexts than in traditional exercises and it also enables at least two activities, vocabulary learning and reading/listening – to happen at the same time. Given the fact that online materials can be chosen by the learner, learning becomes more individualized.

Romanian students' usage of digital tools for vocabulary learning could also be explained through the disadvantages involved by the ubiquitous nature of mobile learning. Although discussed as an opportunity for language learners, empirical evidence shows that in fact learners do not wish to have learning "embedded in everyday life" (Sharples and Rochelle, 2010). Moreover, this is a consequence of the fact that they might perceive their smartphones more related to their personal space, aimed at social interaction, not necessarily at learning. Students' overall use of digital tools for vocabulary learning shows that there is a clear boundary between

students' personal territory and their studying space, often associated with the formal school environment.

Mobile assisted language learning implies in the first instance learning outside the classroom as there is a focus on the mobility aspect of both the device and the learner. Yet, given that students are still enrolled in formal education, their interest in intentionally learning out of classroom might be lower. Moreover, during the focus groups, most of the participants acknowledged that they do not feel challenged or motivated in any way by the learning apps they have been familiar with. Although, the content analysis of various vocabulary learning apps is not the focus of the current research, students' opinions concerning learning apps clearly indicate that there are certain pedagogical issues with the available apps on the market as Ushioda (2013) points out as well.

Given these results, I believe that although mobile learning refers mostly to out of the classroom situations, this perspective should change. The emergence of mobile language learning has enhanced a clear distinction between formal and informal learning, with a strong emphasis on informal learning, outside the class. However, for students in this context, the question is whether 'informal' learning is actually learning at all. In order for mobile learning apps or computer assisted vocabulary programs to be valued by potential users, they should be used within a specific learning context, with clear learning objectives, relevant monitoring and with initial teacher guidance. In fact research (Alajmi, 2011; Clark, Logan, Luckin, Mee and Oliver, 2009; Kennedy and Miceli, 2010; Oxford, 2009; Winke and Goertler, 2008 cited in Lai, 2015) indicated that students lacked an understanding of how they could

better use technological resources, and of the wide variety of these resources. I consider that teacher guidance is needed as research has shown the impact a teacher can have on students' self-directed technology use for learning (Fagerlund, 2012; Lai, 2014; Lai and Gu, 2011 cited in Lai, 2015). Also research (Lai, 2014; Lai et al, 2014; Gray, Chang and Kennedy, 2010 cited in Lai, 2015) has shown that learners tend to incorporate learning resources recommended by their teachers suggesting that teacher behavior is likely to influence students' self-directed use of technology.

I consider that students' use of digital tools for their vocabulary learning is also strictly dependent on the extent to which they have accepted ubiquitous learning in their lives. In this context, Dias (2002) acknowledges that indeed some learners may regard mobile learning as an intrusion into their personal space which may influence their acceptance in the formal learning. This means that students would rather use their devices for personal purposes rather than as 'learning tools'.

Chinnery (2006) claims that these technologies are instructional tools which could be used in the process of learning and teaching accompanied by effective second language pedagogy. Romanian students' usage of mobile and computer technologies for vocabulary learning indicates that although mobile and computer technologies have gained an important global recognition, they have not been integrated yet into the upper secondary language curriculum and that they are not as commonplace in a formal public school context. The results also suggest that simply having access to technology enhanced tools does not necessarily mean that students will auto-

matically use them for learning purposes or that it would have any impact on cognition or learning success.

These results echo Livingstone (2009) and Selwyn (2009), who claim that the digital learners' engagement with technology enhanced tools and resources is limited and sporadic. Luckin et al. (2009) also observed that digital learners' learning engagement is limited to texting, game playing, searching information on various websites. Caruso and Kvavik (2005), Kennedy et al. (2010) also stated that digital learners mostly use basic features of technology, such as texting, social networking and listening to music and not emerging technologies (e.g. Web 2.0). Moreover, Rowlands et al. (2008) claim that digital learners actually lack the ability to use technology enhanced tools for academic purposes.

The data in the current study indicate that learners do not consider that ubiquitous learning facilitates vocabulary learning and most of their digital behavior is related to personal purposes.

Lai (2015) showed that in his study teachers influenced students' self-directed use of technology for language learning through resource recommendations, metacognitive tips and behavior support. This aspect was also highlighted by most of the participants in the focus group discussions. They also stated that they would probably use the digital resources recommended by their teachers, which is in line with Lai (2015).

Consequently, I can conclude that in this context there are several features that define learners' digital engagement, respectively: lack of technology-related academic skills, a certain reluctance for using personal handheld devices for educational purposes, the perception of handheld devices and computers as content delivery

tools rather than potential metacognitive tools, reluctance to mix formal and informal learning outside the classroom, unawareness as to the existence and use of various digital tools for vocabulary learning.

Although Romanian students have at their disposal a wide range of digital instruments to learn and practise vocabulary, they would mostly use the least intrusive ones and the ones which do not imply extensive repetition of vocabulary items. An interesting aspect which emerged out of the findings was the fact that across the research, Romanian learners did not show to be the passive receivers of technology enhanced tools. Although they have grown up using them, they have also uncovered a critical perspective as far as their use for learning purposes is concerned. The ownership and use of any digital device is useless as long as there is no motivation or interest in English vocabulary learning, as was pointed out in several instances by the majority of focus group participants.

6.3. Differences in vocabulary strategy use and digital tools across the four independent variables

This section presents the most important findings in the four variables investigated as far as vocabulary strategy use and digital tools use for vocabulary learning are concerned. It also discusses the linguistic and contextual factors which may have had an influence on the most significant differences across the four independent variables.

6.3.1. Differences in vocabulary strategy use and digital tools use across gender

As far as gender is concerned, in this cultural context females engaged significantly more than males in all types of vocabulary learning strategies (memory, social, determination, cognitive and metacognitive). However, although females are reported to use more strategies than males, both sexes favored mostly social and determination strategies and least cognitive and memory strategies, which indicates that there were no differences in the type of strategies they preferred. The results are in line with Catalán (2003), who found that females had a higher percentage of use in several vocabulary learning strategies. However, unlike the results of the current study, in Catalán's (2003) study females and males preferred different types of strategies. Likewise, in Oxford and Nyikos (1989), females used certain strategies more than males. Also in Oxford and Nyikos (1989), females outperformed males in the frequency of use of language learning strategies, which is in line with the results of the current study. In Green and Oxford (1995), female learners used metacognitive, affective, social and memory strategies more frequently than males.

These results indicate that females tend to be active users of learning strategies. Research on this particular variable in foreign language learning confirms important differences between the two sexes in terms of foreign language learning. Females are superior to males as far as foreign language achievement is concerned especially in tasks related to verbal skills such as reading, listening, writing and speaking (Rúa, 2006). Likewise, females are more in-

terested and motivated to learn a foreign language than males and they also show great interest in the culture and speakers of the foreign language they learn (Burstall, 1975, Powell and Littlewood, 1983, Powell and Batters, 1985, Pritchard 1987, Palacios Martínez, 1994, Dörnyei and Clément, 2001, Rúa, 2006).

As to the use of digital tools for vocabulary learning, the findings indicated that female students also use more digital tools than males do. Studies on gender differences in the use of ICT for educational purposes showed that gender differences exist. For instance, Houtz and Gupta (2001), Shashaani and Khalili (2001), Margolis and Fisher (2002), Broos (2005) found gender differences in favor of males as far as ICT use, PC experience and attitudes towards computer technology. Another study by Liaw (2002) also showed that males have more positive attitudes towards computer technologies than females. However, the studies mentioned above are oriented towards general use of ICT in education, not necessarily towards English vocabulary learning. Since the findings of the current study showed that females use more vocabulary learning strategies than males, females using more digital strategies to learn vocabulary is not at all surprising.

To sum up, results indicate that in Romania, female high school students use more vocabulary learning strategies and more digital tools for vocabulary learning than male high school students do.

6.3.2. Differences in vocabulary strategy use and digital tools use across academic profile

The findings showed that academic profile (humanities, science, math-ICT, economic-technical) makes a difference in students' choice

of vocabulary learning strategies. Humanities students use more strategies than students enrolled in the economic-technical profile. Also, students following a science program use more strategies than students following the math-ICT profile or the economic-technical profile. With regard to differences in digital tools use in academic profiles, the results indicated that there are significant differences across three profiles. Accordingly, students enrolled in the humanities and science profiles use more digital tools for vocabulary learning than the students in the economic-technical profile.

Although the literature is rather sparse as to the effect academic major can have on students' learning strategies, it showed that it can influence students' choice of strategies. Oxford and Nyikos (1989) found out that social science, education and humanities students practised language outside the classroom and used strategies such as memorizing, planning, self-testing significantly more than students majoring in engineering, computer science, physical sciences. Similar findings were reported by Rong (1999) in a Chinese context, Mochizuki (1999), Peacock (2001), Peacock and Ho (2003) in a Japanese context. All these studies indicated that humanities and social science students tend to use more language learning strategies than science, engineering or computer science students. In the current study humanities students also use more strategies than economic-technical students. However, science students used more strategies than math-ICT and economic-technical students. In the context of the current study, the difference in profiles can be explained from two perspectives. First of all, humanities students have a different motivation to learn a foreign language than students enrolled in the other academic profiles, which influences their use of strategies.

Secondly, the science profile is generally regarded as the most challenging and prestigious academic profile in this particular cultural context. Students enrolled in the science profile are successful motivated learners, therefore they are likely to employ more strategies than economic-technical or math-ICT students.

The results for both vocabulary strategy use and digital tools use are quite similar, indicating that students enrolled in the humanities and science profiles have a higher interest in vocabulary learning strategies and the instruments to achieve more success in vocabulary learning. The students enrolled in these profiles have also more English lessons per week and based on my practitioner experience, students in a theoretical high school are generally more motivated to learn and achieve success than students in a technological high school (the case of students enrolled in an economic-technical profile).

6.3.3. Differences in vocabulary strategy use and digital tools use across language program

In terms of differences between students following different language programs (intensive English, bilingual or normal) the findings were not very surprising. Intensive English students used more vocabulary learning strategies than students following a normal program. Also students following a bilingual program used more strategies than students enrolled in a normal program. These outcomes suggest that learners who have an interest in languages will use more vocabulary learning strategies. These results are in line with the results of Hong-Nam and Leavell (2006) who showed that learners enrolled in an intensive English language program are more aware of the role of learning strategies in their learning.

Likewise Oxford and Nyikos (1989) pointed out that previous language learning experience, defined in terms of years of study of English, influences the learning strategies used by students. In the context of the current study, students following an intensive or bilingual language program have studied English for more years than students following a normal program, therefore, it is likely that they have developed more learning strategies.

As to the use of digital tools, the results showed that intensive English and bilingual students are more engaged with using digital tools for vocabulary learning than students following a normal program. This is not very surprising given the fact that both intensive English and bilingual students allocate more time to foreign language learning than students in a regular program. These outcomes suggest that the more time one allocates to English language learning, the more likely it is to use more learning strategies or more digital tools for vocabulary learning.

6.3.4. Differences in vocabulary strategy use and digital tools use across different age groups

The current study investigated the differences between two age groups (14–16 years old, 17–19 years old) in terms of vocabulary strategy use and digital tools use. The results indicated that the 14–16 years old group used more vocabulary learning strategies than the 17–19 group. The 14–16 age group used significantly more social strategies than the 17–19 age group. However, both age groups used social and determination strategies most. These results are in line with Muñoz (2006) who also found that there are changes in language strategy use which occur with age and that these changes

are not identical for all types of strategies. For the differences in strategy use, the results of the current study are justifiable. Based on these results, but also on my observation, students in this context tend to use fewer strategies as they mature. With regard to differences in digital tools use, no differences were found between the two age groups as to the use of digital tools for vocabulary learning. This may be due to the fact that high school students represent a more homogeneous group concerning technology skills as they have all grown up with several technological affordances available, therefore, there is no significant gap between the two age groups.

6.3.5. Differences in students' attitudes towards the use of digital tools across the four independent variables

As to the variables investigated, students' degree of engagement and attitudes to CALL and MALL vary across gender, age, academic profile and language learning program. In terms of academic profile, significant differences were found between students enrolled in a science program, who have more favorable attitudes towards the learning of vocabulary with digital tools and students from the economic-technical profile. As to the language program followed by students, the data revealed that students following a bilingual program have more favorable attitudes than students enrolled in a normal program. As far as gender is concerned, the overall results show significant differences between males and females, with females reporting more favorable attitudes. As to the differences in age groups, there weren't any significant differences in attitudes between students from the two different age groups, both groups having

similar attitudes towards the use of digital tools in vocabulary learning.

The differences in the two academic profiles, science and economic-technical, suggest that students enrolled in the science profile might have an interest in technology and language learning but also the fact that students enrolled in science are simply more motivated and have more favorable attitudes towards learning in general, which may also impact on their attitude to foreign language learning with technology. Likewise, it is not very surprising that students following a bilingual program have more favorable attitudes than students following a normal language program since bilingual students are more interested in language learning and the opportunities offered by technology to achieve success in language learning. Therefore, I believe that motivation to learn and achieve success in language learning are the main factors determining more favorable attitudes towards learning vocabulary with digital tools.

In conclusion, I partially disagree with the assumption that computer and mobile technologies have transformed the way learning happens and people learn (Koller, Harvey, Magnotta, 2010) because there has not been enough empirical evidence to show how exactly they have transformed learning. Indeed, the results of the current study indicated that students' use of vocabulary learning strategies has not been affected by the available technological affordances.

CHAPTER 7

CONCLUSION

7.1. Summary of the main findings

The current research started from a practical interest in the way Romanian high school students learn vocabulary in English in the digital age. As a practitioner in the context where I conducted the study, I found it very relevant and meaningful to investigate the vocabulary strategies students use nowadays, how they use technology in their learning of vocabulary and their attitudes towards the learning of vocabulary with digital tools. The aims of the current project were 1) to identify the vocabulary learning strategies used by Romanian students; 2) to gain insights into how students make use of computer and mobile assisted technology to learn or consolidate vocabulary in English; 3) to better understand students' attitudes towards learning with digital tools; 4) to investigate whether the four independent variables (gender, age, language program and academic profile) influence the vocabulary learning strategies students use in a digital age.

To sum up, the students in this particular cultural context prefer social strategies, followed by determination, metacognitive, cognitive and memory strategies. Although they are reported to use the strategies in these categories, their usage is medium towards low which indicated that overall Romanian high-school learners

do not make use of a great amount of strategies. As to the individual strategies, the findings revealed that the impact of a new word, English media, guessing from context, associating the word with a picture and using cognates are frequently used strategies. Also the main findings showed that students' use of vocabulary learning strategies varies across the four independent variables. For instance, females use significantly more vocabulary learning strategies and more digital tools for vocabulary learning than males. Although they use more vocabulary learning strategies, both sexes prefer the same types of strategies. As to academic profile, the findings showed differences in vocabulary strategy use and digital tools use. For example, humanities students use more vocabulary learning strategies than students in the economic-technical profile whereas science students use more strategies than students in the math-ICT class or economic-technical class. As to the use of digital tools, students in the humanities and science profiles use more than students in the economic-technical profile. The findings related to the differences in language program indicated that students who study English intensively would use more strategies and more digital tools than students following a regular language program. As to the age factor, the outcomes showed that the 14–16 years old group uses more vocabulary learning strategies than the 17–19 years old group. In terms of strategy preference, both age groups prefer the same type of strategies. The differences found across the four independent variables indicate that the use of vocabulary learning strategies varies according to students' gender, academic profile, language program and also age, which uncovers the complexity of this process.

As to the use of digital resources in learning vocabulary, the results indicated that Romanian high school students have a low usage of digital tools for learning, that they mostly use digital determination and social strategies, followed by memory and metacognitive-cognitive digital strategies.

In terms of individual digital tools for vocabulary learning, although Romanian students have at their disposal a wide range of digital tools, they use few of them, with a preference for online dictionaries, followed by online games and social networking web sites. The findings showed that overall Romanian students are not quite familiar with computer and mobile assisted language learning tools. Regarding Romanian students' attitudes towards learning vocabulary using technology enhanced tools, the students in this context have neutral attitudes. There are three reasons which may account for these findings. First of all, as previously mentioned, lack of teacher training in CALL and MALL, secondly, the fact, also observed by Pegrun (2014) that most of the educational apps are pedagogically very traditional, based on behaviorist drill-and-practice approaches, thirdly, the fact it is also likely that students associate their digital tools with personal space. Although Romanian students have at their disposal a wide variety of technological affordances, with unlimited access to information, the current study has put forward the idea that managing learning via these resources requires different skills on the part of the student, mostly the capacity to regulate one's learning. Nowadays CALL and MALL provide tools which also enhance metacognitive skills, however, this is not enough for school aged children, who need to be guided through the process.

The current technology enhanced learning context facilitates the use of vocabulary learning strategies which require a new type of literacy. This type of digital literacy is not acquired, but it is rather learned within a meaningful learning context.

7.2. Contributions

7.2.1. Contributions to research on VLS

The present study has made some important contributions to the field of vocabulary learning strategies in a digital context. Most of the research studies investigating this topic were conducted in university settings without considering all the variables I have taken into account. In this context, the novelty consists of the fact that it is a study that focuses on high school students in real classrooms, following different academic and language programs, characteristic of the socio-cultural context in which the study takes place. The study investigated four variables: gender, age, students' academic profile and students' language program and the focus was on finding out how these variables determine the vocabulary learning strategies students use. From this perspective, the variables discussed here influence students' choice and use of vocabulary learning strategies. I believe this may have implications for practice as it shows that students from different academic profiles and language programs approach vocabulary learning differently. As to the gender differences, the results of the study contribute to the general knowledge that females are more interested in language learning, however, what is particular to this context is that both sexes prefer the same types of strategies.

Also, a significant finding is that students' use of VLS to learn or consolidate words is dependent not only on these variables, but also on other contextual factors, such as the context where students encounter words or the impact a word may have on them. In other words, it makes a difference if students encounter a word in the classroom or outside the classroom, if they encounter it in a movie, song or conversation, or in a reading text. Likewise, some words draw students' attention more than others do. Therefore, this impacts on students' retention of those words as well. This outcome provides a rather different perspective on future research on VLS and the instrument to investigate the complex nature of vocabulary learning. I consider that an instrument investigating vocabulary learning strategies should take into account not only how students learn vocabulary, but also how they encounter new words and the reasons why some words have more impact than others.

This suggests that questionnaires may be limited in terms of what they can tell us about vocabulary learning strategies since choice of vocabulary strategy changes according to the specifics of the situation.

7.2.2. Contributions to research on CALL and MALL

The current study also brings new findings in the domain of CALL and MALL as far as students' use of tools for vocabulary learning and their attitudes to them are concerned, giving us an insight into how learners in this context use CALL and MALL to support their vocabulary learning. So far research has focused on different individual CALL or MALL activities for vocabulary learning, which were often used in experimental situations. I found a limitation in the literature regarding empirical evidence that shows

how students voluntarily use CALL and MALL in their language learning. Contrary to my initial assumptions, the availability of a wide range of digital tools for language learning does not necessarily mean students use them or feel motivated by them in their language learning. The results clearly indicate students' preference for using digital tools for personal entertainment rather than for deliberate learning activities. The current study highlighted a new direction in vocabulary learning, indicating that digital vocabulary learning strategies can be split into four types, determination, social, meta-cognitive-cognitive and memory strategies. Although learners have a variety of purposes when using digital strategies such as entertainment, explicit learning or improving knowledge about words, I consider that it is possible to have a taxonomy of digital learning strategies.

Although CALL and MALL involve the use of devices without necessarily relying on a teacher, the outcomes in this study show that at least for these age groups, teacher guidance is needed. Consequently, if CALL and MALL vocabulary learning activities are to be used, then both students and teachers need to be trained how to make use of the available resources.

7.2.3. Contributions to research on students' attitudes and motivation to use CALL and MALL resources

The students' perspective on the use of CALL and MALL in vocabulary learning was necessary as there is a gap between students' actual use of technology tools for learning and the assumption that the availability of technology enhanced tools automatically determines students to incorporate digital tools in their learning. The

participants identified critical aspects as far as the use of digital tools for vocabulary learning is concerned highlighting the fact that these tools cannot replace motivation to learn. The participants in this context do not feel computer and mobile learning resources are motivating and challenging enough. The outcomes of the study showed that learners who are more interested in language learning would attempt to use these tools just as well as they would use more vocabulary learning strategies. It is the case of students who study English intensively who clearly showed an interest for incorporating these tools in their language learning.

In other words, it is likely that students who are motivated to learn vocabulary, would also use the available tools and strategies. They do not need to have a special interest in technology, as the findings indicated that students from the math-ICT profile were not more motivated to use digital tools in their learning than students in the humanities or the science profile. Furthermore, we knew that there are gender differences between females and males learning foreign languages, but we did not know whether there are differences in their use of digital tools for learning or their attitude to them. These differences showing that females also use more digital tools than males and have more favorable attitudes may indicate that their interest in language learning determines their interest in technology enhanced tools for language learning as well. Therefore, students may not be interested in a digital tool for language learning, as many benefits it may have, if they are not interested in language learning. Also, the same argument is valid for the differences found across students enrolled in different language programs, students

enrolled in an intensive program using more digital tools than students in a normal language program.

Another critical aspect which emerged from the data is students' willingness to embed learning activities in their free time. I believe that the 'learning anytime, anywhere' assumption is rather a myth which does not mean anything for learners as long as they are not determined enough to learn anytime, anywhere. The tools which enable ubiquitous learning to occur are only beneficial as long as the learners want that. Research on ubiquitous learning tools generally overlooks this aspect and focuses more on the benefits of these tools.

7.2.4. Contributions to the development of an instrument

In order to investigate students' use of digital tools for vocabulary learning and their attitudes to them, I have constructed a questionnaire which was thereafter merged with the questionnaire on vocabulary learning strategies. The questionnaire items have been constructed to meet the purposes of the current investigation and it has been proved to be both valid and reliable. If other researchers would like to replicate the section related to the use of digital tools by students and their attitudes to them in other contexts or with different age groups, this is possible.

7.3. Implications for theory and practice

I believe that one of the main implications for theory on VLS is the fact that the same vocabulary learning strategies may fall in different categories depending on how the learner uses a certain strategy or on how the learner encountered the word. Therefore, a

learner may use a determination strategy with a social purpose in mind, indicating that vocabulary learning in particular may be very much dependent on the students' learning intentions and purposes at a certain moment. I consider that an important contribution is the acknowledgement that choice of vocabulary strategy changes according to each particular situation being thus context-dependent. Accordingly, this implies, as previously suggested, that questionnaires may not necessarily portray a very accurate picture of vocabulary learning strategies.

Likewise, an important implication for theory is the grouping of digital strategies for learning vocabulary in determination, social, memory and metacognitive-cognitive. Although strategies may fall in more than one category, this possible categorization of digital strategies could enable us to better identify the students' learning intentions when using a certain strategy.

As far as practice is concerned, I have already mentioned throughout this chapter several implications for the teaching and learning of vocabulary in the current digital context, which I will summarize below.

First of all, the study revealed that the great majority of participants are not aware of the fact that the devices they own are more than delivery content devices and that there are numerous ways in which their device could support their learning of English vocabulary. Digital tools should be integrated in the syllabus and schools should enable both teachers and students better make use of them within a school environment. I consider that a proper inclusion of these tools in the vocabulary teaching and learning could impact on students' engagement with vocabulary learning in a digital context.

Apart from general practical implications related to the use of digital tools for vocabulary learning in the foreign language classroom, this section also focuses on presenting some activities that English language teachers could encourage students to do. As Pegrum (2014) suggested, nowadays we do not longer learn vocabulary in isolation, as we are used to sharing vocabulary items, to annotate, to learn or consolidate words while chatting on various social platforms. Therefore, vocabulary learning has become a rather social process (Pegrum, 2014). Likewise, language has gradually become integrated with multimedia elements and these changes are likely to generate various vocabulary learning activities using digital tools (Pegrum, 2014).

First of all, as Kress (2003) points out, there is a shift in communicating words, described as a shift from 'telling' towards 'showing'. Therefore, this change leads to changes in vocabulary teaching. Language teachers could have students search for an image/video representing a certain word or expression rather than giving an explanation of it.

Secondly, transmission of words and expressions encountered in class accompanied by definitions, examples, translations via email and SMS drilling for further consolidation would enable learners to reinforce learning that has taken place in class. Therefore, sending quiz questions, words, expressions onto students' mobile devices enhances spaced repetition of vocabulary provided words are pushed once, twice, three times a day (Pegrum, 2014). However, learners need to also be willing to revise those words, not just to be passive receivers of content.

Thirdly, teachers should enable students in class to access web-based information about words and idioms. The use of online dictionaries and glossaries in the language classroom should certainly be widely used across schools.

As a teacher I would strongly recommend that students use a word-of-the-day app which is available on online dictionaries and also share the word on their social networking pages.

Likewise, I would suggest that teachers encourage students build their own personal wordlists on their device, enabling them to recycle words learnt in class anytime, anywhere, if they are willing to do so. I consider that encouraging students to build a personal lexicon on their device represents a useful way to have students more involved and interested in consolidating vocabulary while it also enhances adaptive spaced repetition of items.

Another practical activity which students are likely to enjoy represents the use of multimodal games for mobile devices. This type of entertaining activity could complement the vocabulary learning that takes place during regular instruction. Likewise, there are several entertaining vocabulary apps available which, if recommended by the teachers, students are likely to use.

Moreover, students could use their mobile devices to take photos of real contexts illustrating different idioms and expressions. This type of activity enhances user generated content which could be discussed and shared in class afterwards (Wong et al, 2010). Likewise, this activity would enable students to notice vocabulary in everyday situations while also enhancing communicative activities about others' examples. This is an example of collaborative digital learning of vocabulary.

Also forming an online vocabulary learning community (e.g. on Facebook or Twitter) for different classes, could represent a practical collaborative way of learning and consolidating vocabulary. Students could come up with example sentences of words studied or they could challenge their online peers to discover the meaning of new words.

Therefore, teachers themselves could build a MALL related culture in their school and engage students to learn vocabulary using their own handheld devices.

As to how other vocabulary learning strategies could be turned into practical class activities, I believe using songs and shorts in the language classroom, represent activities where students could learn words in enjoyable contexts. Such activities can be followed by discussion of words encountered in the context of the song or of the short movie they have watched. Based on my experience, these vocabulary learning activities equally engage students and raise their interest since they match their age related interests as well.

I consider that encountering new words using media tools represents an important first step in vocabulary learning, before the discovering of the meaning of a new word stage. As my findings showed, the impact a new word may have on students' learning is very important and it can determine faster retention of vocabulary. Therefore, enabling students to encounter words in digital contexts is a useful practical activity which teachers could do in the classroom.

In conclusion, although in Romania, classrooms may not be technologically equipped, making it difficult the use of CALL activities at classroom level, teachers could explore the various ways in which

students can use their handheld devices during the lesson as well as the social networking platforms students use.

The practical activities mentioned in this section could be easily performed in the language classroom in Romania enabling the learning of vocabulary in English using digital tools.

The use of digital tools for learning vocabulary in English involves the expanding of students' learning environment (Pegrum, 2014), beyond the classroom, bringing changes not only on students' approach to learning but also on teachers' approach to teaching, playing a crucial role in the development of digital learning strategies.

7.4. Limitations of the study

One possible limitation is the lack of a proficiency test for the participants which could have explained some of the findings from different perspectives. Although the participants of the study are expected to have B1 to C1 levels in English, I did not conduct any language level test. This was a limitation as it did not allow me to claim that intermediate students use more vocabulary learning strategies than advanced students or that in this particular cultural context, the use of vocabulary learning strategies decreases as students become more proficient. The differences in vocabulary strategy use and digital tools use across different language levels would have been an interesting aspect to study and it should certainly be further researched with different instruments for different language levels.

Secondly, one of the findings was about contextual dependence of strategy use, which is an aspect the questionnaire did not cover.

However, it is an aspect which should be covered in future research on VLS.

Thirdly, the question is whether a general vocabulary learning questionnaire can actually reveal the actual picture of students' learning behavior. The focus group interviews uncovered the fact that students use certain strategies in certain situations and other strategies in other situations or contexts. Likewise, when completing the questionnaire, the participants may not have been very accurate about their vocabulary learning being likely to overestimate or underestimate the frequency of use of particular strategies (Cohen, 1987).

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APPENDICES

Appendix A:
Focus group interview guide

Introduction

Overview of the topic

Ground rules

Opening remarks:

Global/settling Q1: How do you prefer to learn new English words – Reading/Writing/Speaking/Listening?

Global/settling Q2: Do you think you are good at learning new words?

Global/settling Q3: What kind of words do you like (to learn)?

Where do you usually encounter new words?

<u>Prompts</u>:

- textbook?
- classroom? During the English lesson?
- the internet? online English pages?
- movies/songs/TV programs in English?
- E-books or traditional books?
- online games?
- apps (smartphone/iPad/tablet)?
- computer based vocabulary programs?
- conversations with native speakers/teachers/peers?
- vocabulary exercises? Paper or computer based?
- friends/family
- magazines/comics

What do you do when you first encounter new words?

<u>Prompts</u>:

- do you look them up in a dictionary?
- if yes, what type of dictionary?
- Monolingual/bilingual/traditional or web-based/on your smartphone/iPad/tablet/computer?
- do you make it say the word (if it is a dictionary on one of your devices)?
- which dictionary do you prefer? Can you justify your choice?
- do you use any translator app?
- repeat it / write it down /make a gesture?
- do you ignore new words?
- do you try to guess the meaning from context?
- do you associate them with a cognate in Romanian/a similar word in Romanian?
- do you ask somebody around you for the meaning?
- do you try to remember it to ask someone later?
- anything not listed?

What do you do with the new words you've encountered ?

<u>Prompts</u>:

- do you write them down anywhere?
- or if on a page mark the page in any way?
- do you make word cards?
- do keep a vocabulary notebook? Traditional or on an electronic device?
- have you ever kept one?

- how do you organize the words you've encountered?
- what is your favorite way of organizing new words?
- what reasons do you have for not organizing the words in any particular way?
- any pros and cons for organizing/not organizing the words?

How do you memorize/remember new words?

Prompts:

- do you do any practice vocabulary exercises? Paper-based or online?
- which ones do you prefer?
- do you find vocabulary exercises useful or not for remembering new words?
- do you copy the words several times?
- do you use them in conversations? Or during the lessons?
- do you have any tips to share with us for remembering new words?
- any particular method you use?
- which is the most useful method for you?

How do you try to review the vocabulary memorized?

Prompts:

- do you think it is important to review vocabulary you've already memorized?
- do you ever test yourself on the words you've learnt?
- if yes, do you use any particular app on your phone or iPad to test the new words?

Would you like to try one if you could?
How does your everyday exposure to songs/movies/TV programs in English help you in your vocabulary learning?

<u>Prompts</u>:

- in what ways does it help? Pronunciation?

In general, do you find you find it hard/challenging/easy to learn English vocabulary? Can you justify your answer? What makes it hard/easy in your opinion?
What apps have you downloaded on your phone or iPad to help you learn vocabulary?

<u>Prompts</u>:

- can you give me examples of vocabulary learning apps you've been using?
- how did you become familiar with these apps?
- do you prefer a particular app?
- when do you usually use apps?
- can you think of some pros and cons of using these apps?

Where do you find out about them?/Do your friends recommend them?
How much money would you pay for a vocabulary learning app? (Would you pay more for a good one?)
In your opinion, do you think that vocabulary learning apps help you improve/increase your English vocabulary?
How do you feel when you learn/recycle vocabulary using the apps on your devices? Engaged? Motivated? Bored?
Do you know any computer-based vocabulary learning programs?

Prompts:

- have you ever tried learning English vocabulary using a specialized online vocabulary learning program?
- if yes, which program?
- if no, is it because you are not familiar with any of those programs?
- any pros and cons?

Is any of you familiar with lexical concordancers?
In general, what is your opinion as to vocabulary learning with technology? What do you mostly like about it? What do you dislike about it?

Ending question:
Is there anything else you would like to add as to the ways you learn English vocabulary with our without technology?

Final remarks:
That concludes our focus group. Thank you so much for participating and for sharing your opinions.

Appendix B: Survey of students' vocabulary learning strategies in a digital context

SURVEY OF STUDENTS' VOCABULARY LEARNING STRATEGIES IN A DIGITAL CONTEXT

The study is part of a research doctorate at the University of Exeter (UK), investigating Romanian students' English vocabulary learning strategies. I would appreciate it if you could contribute by filling in this questionnaire. You don't have to complete this questionnaire if you don't want to. We will not ask you for your name and your answers will be confidential and used only for research aims.

There are no right or wrong answers, so don't be influenced by the answers of your classmates. The answers you give should reflect what you actually do as you learn, not what you think that you should do. Your honest answers will contribute a better understanding of how Romanian high school students use vocabulary learning strategies.

For each statement check the box that best describes your vocabulary learning behavior.

Thank you very much!
Diana Cojocnean (diana.cojocnean@gmail.com)

GRADE: 1. IX 2. X 3. XI 4. XII

ACADEMIC PROFILE: 1. Humanities 2. Science 3. Maths-ICT

AGE: ______

I am: **1.** boy **2.** girl

Number of English lessons per week at school: __________

I have studied English for ________ years at school.

Please circle the language program that you follow at school:

1. Intensive English **2.** Bilingual **3.** Normal

I passed:

1. FCE **2.** CAE **3.** CPE **4.** IELTS **5**. Other:____________________

6. No language test

What other languages do you learn at school?

1. French **2.** German **3.** Spanish **4.** Italian **5.** Latin **6.** Other ______

My mother tongue is ___________________________

At school I study in: **1.** Romanian **2.** German

	1. What do you first do when you encounter a new word?	**NEVER**	**RARELY**	**SOMETIMES**	**OFTEN**	**ALWAYS**
DET	**1.** I guess the meaning of the new word from the context in which it appears.					
DET	**2.** I look up the word in the dictionary if the context is not clear enough.					
DET	**3.** I look up the word in the dictionary to check if my guessing was correct.					
DET	**4.** I look up the word in an English-Romanian dictionary.					
DET	**5**. I look up the word in an English-English dictionary.					
DET	**6.** I think of any similar Romanian words that could mean the same thing (e.g. imagination – imaginație).					
DET	**7**. First I work out what part of speech it is – Verb/Adjective/Noun – which helps me to guess the word's meaning.					
DET	**8**. I break down the word into parts and see if I know any of them like 'audi' means 'sound'.					
DET	**9.** I figure out the meaning if I see a picture of it.					
SOC	**10.** I ask the teacher for the meaning of the word.					
SOC	**11.** I ask a classmate/friend.					
SOC	**12**. I figure out the meaning of a word if I work in pair or group work.					
COMMENT (if you do anything else which helps you discover the meaning of a new word, please write here)						

2. What do you do after you've discovered the meaning of a new word?		NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS
MEM	**1.** I say the word aloud repeatedly to remember it.					
MEM	**2.** I study the spelling of the new word carefully.					
MEM	**3.** I try to remember the spelling without writing down the word.					
MEM	**4.** I try to remember the word's affixes and root separately.					
MEM	**5.** I try to relate the word to its part of speech (noun, verb, adjective).					
MEM	**6.** I connect the word with similar words in Romanian or from other foreign languages I know (e.g. coffee – cafea).					
MEM	**7.** I learn the words of an idiom together as if they were just one word.					
MEM	**8.** I group the new word in 'word families'.					
MEM	**9.** I associate the new word with a synonym or an antonym.					
MEM	**10.** I associate the word with other words from the same thematic field (e.g. vegetables, utensils etc.)					
MEM	**11.** I associate the new word with an image.					
MEM	**12.** I remember a word after I have looked it up in the dictionary several times.					
MEM	**13.** I connect the new word to a personal experience.					
MEM	**14.** I link the word to one that rhymes with it (e.g two is a shoe).					
MEM	**15.** I associate the word with a familiar place.					
MEM	**16.** I connect the English word to a Romanian word by sound, for example, the English word 'far' sounds very similar to the Romanian word 'far').					

MEM	**17.** I make sentences with the new words.					
MEM	**18.** I remember the new word by thinking about it very much.					
MEM	**19.** If the word has an impact on me I simply remember it.					
MEM	**20.** I remember the word by recalling the context/sentence/example where I encountered.					
MEM	**21.** I write the new words on a wall, door, whiteboard, pin up post so that I can always see them.					
MEM	**22.** I arrange the new words using graphic organizers (e.g. word trees).					
MEM	**23.** I use semantic feature grids (e.g. man, woman=human beings etc.)					
MEM	**24.** I use 'scales' for gradable adjectives (e.g. good-better-the best).					
MEM	**25**. I group words together within a 'storyline' (e.g. dogs, cats like….).					
MEM	**26.**I underline the initial letter of the word.					
MEM	**27.**I paraphrase the word's meaning.					
MEM	**28**.I group words together spatially on a page in my notebook by forming geographical patterns (e.g. triangles, circles, columns etc.).					
COG	**29.** I write the new word with a translation or definition in a word list which I revise regularly.					
COG	**30.** I make a card with the new word (a word card=a card on which you write the new word and on the opposite side you write information about that word, for example its definition, an example sentence etc.) to learn with.					
COG	**31.** I write the word in my classroom notebook in case I will need it in the future.					
COG	**32.** I copy the word several times.					
COG	**33.** I write the new word in a vocabulary notebook.					

COG	**34.** I revise the vocabulary section in my textbook regularly.					
COG	**35.**I listen to the pronunciation of new words during the English lesson then I also pronounce them.					
MET	**36.** I do not try to remember the word.					
MET	**37.** I test myself with new words.					
MET	**38.** I remember new words when I encounter them again in movies and music					
MET	**39.** I look over the new words one day, then a few days later and so on as many times is necessary to retain the words.					
MET	**40.** I do vocabulary exercises in my textbook.					
MET	**41.** I practise the meaning of new words at home as well.					
SOC	**42.** I use the new words as often as I can in conversations/chats.					
SOC	**43.** I practise the meaning of new words during the activities in the English lesson.					
SOC	**44.** I practise the meaning of new words with my friends/classmates during pair or group work at school.					

45. My useful strategies for remembering the new words are:

………………………………………………………………………………………………………

………………………………………..……………………………………………………………..

……………………………………………………………………………………………..………

3. How do you learn new vocabulary in English using technology enhanced tools?		NEVER	RARELY	SOMETIMES	OFTEN	VERY OFTEN
DET	**1**. I search new words in an online dictionary on my phone.					
DET	**2**. I search new words in an online dictionary on my computer/tablet.					
DET	**3**. I use a translation app (e.g. Google translate).					

DET	**4.** I access the link to a new word in an online text which sends me to a definition of the word in the dictionary.					
DET	**5.** I use Thesaurus in Microsoft Word when I need synonyms or antonyms.					
DET	**6**. I look up for an image on the Internet which could represent the meaning of a word .					
DET	**7.** I learn new words while browsing different webpages on the Internet.					
DET	**8.** I learn and figure out the meaning of some words from online games.					
DET	**9.** I learn new words from apps I'm using.					
DET	**10.** I download vocabulary learning apps on my smartphone/tablet/iPad					
DET	**11.** I access corpus websites (corpus is a collection of texts which are stored electronically where you can see the word's collocation, its frequency, the grammatical patterns in which the word appears, e.g. (e.g http://corpus.byu.edu/bnc/).					
MEM	**12.** I save new words in a list on my phone.					
MEM	**13.** I put words I want to remember on my computer screen to remind me.					
MEM	**14.** I look up the pronunciation of a word in an online dictionary and I listen to it.					
MEM	**15.** I record myself on my phone/tablet saying the new word.					
MEM	**16.** I remember words encounterd online if I access those pages again.					
MET-COG	**17.** I use the spell check in Microsoft Word.					

MET-COG	**18.** I do vocabulary exercises on various webpages on the Internet.					
MET-COG	**19.** I use computer assisted vocabulary programs to learn new words (e.g. my vocabulary.com, vocabularynotebook.com, http://www.rosettastone.eu/etc.).					
MET-COG	**20.** I test myself on new words by doing online vocabulary quizzes.					
MET-COG	**21.** I watch and listen to tutorials, presentations, talks/podcasts/radio on subjects that I am interested in when I am online.					
SOC	**22.** I learn new words in English when using social networking (Facebook, Twitter etc.).					
SOC	**23.** I chat in English (even with Romanian speakers) when I am online.					
SOC	**24.** I learn vocabulary through computer assisted tasks at school.					
SOC	**25.** I use new vocabulary through tasks I do on my device (e.g. take photos, record myself, make short videos and present them, role play, group conversations in English on whatsapp etc.).					
SOC	**26.** I ask questions on various websites/discussion forums (e.g. https://answers.yahoo.com) as to the contexts in which I can use a word/expression.					
SOC	**27.** I ask a friend/classmate who is online about the meaning of a word.					
MET-COG	**28.** I play vocabulary games on my smartphone/iPad/computer (e.g. hangman, scrabble, memory, crosswords, word associations etc.).					

29. My favorite apps/ computer assisted vocabulary programs/online games from which I've been learning words in English are: ………………………………………………………………………………………………… ………………………………………………………………………………………………… …………………………………………………………………………………………………
COMMENT (if you use other technology enhanced tools for vocabulary learning, please write here)

4. What is your attitude to vocabulary learning with technology?	**STRONGLY DISAGREE**	**DISAGREE**	**NEITHER AGRE NOR DISAGREE**	**AGREE**	**STRONGLY AGREE**
1. I prefer online vocabulary exercises to textbook vocabulary exercises.					
2. I would like to be trained to use apps and other technology resources for vocabulary learning.					
3. I would like to use my own devices (smartphone/iPad/tablet) for language tasks in the classroom.					
4. Vocabulary learning apps and computer assisted vocabulary programs are useful for learning vocabulary.					
5. Apps and computer assisted vocabulary learning programs are a source of entertainment, not learning.					
6. Many apps and computer assisted vocabulary programs are too easy and boring.					
7. I would use apps in my free time to learn vocabulary.					

8. I would only use vocabulary learning apps or computer assisted vocabulary learning programs if I had to prepare for an online language test (FCE, CAE, CPE, IELTS etc.).					
9. When I learn vocabulary online (apps, computer assisted vocabulary programs, vocabulary exercises etc.) I am distracted by other online activities.					
10. I would like to know more about the opportunities that technology provides for vocabulary learning.					
11. Learning English vocabulary with technology depends on the type of person you are and on your learning style.					
12. I would feel motivated to increase my vocabulary in English if I used computer based tasks or apps for this.					
13. Picking vocabulary from English webpages is very helpful for increasing my vocabulary.					
14. Writing the new words in a word list on my device (phone/tablet) or on windows sticky notes on my computer/tablet is helpful.					
COMMENT (if you want to add anything else about the way you feel as to vocabulary learning with technology, please write here)					

Appendix C: Strategiile de învățare a vocabularului în limba engleză într-un context digital (Romanian version of the VLSQ questionnaire)

STRATEGIILE DE ÎNVĂȚARE A VOCABULARULUI ÎN LIMBA ENGLEZĂ ÎNTR-UN CONTEXT DIGITAL

Acest chestionar este parte dintr-un studiu de doctorat din cadrul Universității din Exeter, UK, cu tema „Strategiile de învățare a vocabularului în limba engleză în contextul epocii digitale." Completarea acestui chestionar este voluntară. Chestionarul este anonim, răspunsurile sunt confidențiale și folosite doar în scopul cercetării. Nu există răspunsuri greșite sau corecte, așadar nu te lăsa influențat de răspunsurile colegilor. Răspunsurile date trebuie să reflecte propriile tale strategii de învățare, și nu ceea ce crezi că ar trebui să faci în acea situație. Răspunsurile tale vor contribui la identificarea strategiilor de învățare a vocabularului în limba engleză folosite de către elevii de liceu din România în contextul epocii digitale. Te rog să bifezi căsuța corespunzătoare situației tale.

Îți mulțumesc!
Diana Cojocnean (diana.cojocnean@gmail.com)

Încercuiește cifra corespunzătoare răspunsului ales.

CLASA: 1. a IX-a 2. a X-a 3. a XI-a 4. a XII-a

PROFIL: 1. Uman 2. Științe 3. Mate-Info 4. Altul ________________

VÂRSTA:______

Sunt: 1. băiat 2. fată

Câte ore de limba engleză ai pe săptămână? ________

Am studiat limba engleză la școală timp de ________ **ani** .

La școală studiez limba engleză în regim:

1.Intensiv 2. Bilingv 3. Normal

Am certificatul:

1. FCE 2. CAE 3. CPE 4. IELTS 5. Altul: _____________________
6. Nu am niciun certificat

Ce alte limbi studiezi la școală?

1. franceză 2. germană 3. spaniolă 4. italiană 5. latină 6. alta _________

Limba mea maternă este ____________________________

La școală studiez în limba: 1. Română 2. Germană

	Ce faci prima dată când întâlnești un cuvânt nou?	**NICIODATĂ**	**RAR**	**CÂTEODATĂ**	**DES**	**TOT TIMPUL**
1.	Ghicesc înțelesul cuvântului din contextul în care apare.					
2.	Caut cuvântul în dicționar dacă contextul nu este destul de clar.					
3.	Caut cuvântul în dicționar să verific dacă am ghicit corect.					
4.	Caut cuvântul într-un dicționar Englez-Român.					
5.	Caut cuvântul într-un dicționar Englez-Englez.					
6.	Mă gândesc la un alt cuvânt similar din limba română care ar putea însemna același lucru (e.g. imagination – imaginație).					
7.	Prima dată încerc să-mi dau seama ce parte de vorbire este cuvântul (verb, adjectiv, substantiv), ceea ce mă ajută să ghicesc înțelesul lui.					
8.	Despart cuvântul ca să-mi dau seama dacă cunosc vreuna dintre părțile componente (e.g. *audi* înseamnă *sunet* – deci deduc ce înseamnă *audiție*).					
9.	Îmi dau seama de înțelesul cuvântului dacă văd o imagine reprezentativă.					
10.	Întreb profesorul despre înțelesul sau traducerea cuvântului.					
11.	Întreb un coleg sau un prieten dacă nu știu cuvântul.					

12.	Atunci când lucrez în perechi sau în grup, îmi dau seama mai repede de înțelesul unui cuvânt.					
COMENTARII (Dacă mai faci altceva atunci când întâlnești un cuvânt nou, completează această secțiune)						

	Ce faci după ce ai descoperit înțelesul unui cuvânt nou?	**NICIODATĂ**	**RAR**	**CÂTEODATĂ**	**DES**	**TOT TIMPUL**
1.	Spun cuvântul cu voce tare ca să îl rețin.					
2.	Mă uit cu atenție la felul cum se scrie cuvântul.					
3.	Încerc să rețin cum se scrie cuvântul fără să-l scriu.					
4.	Încerc să rețin prefixele și sufixele separat.					
5.	Fac o legătură între cuvânt și partea de vorbire (verb, adjectiv, substantiv).					
6.	Fac o legătură între cuvânt și alte cuvinte similare din limba română sau dintr-o altă limbă străină pe care o studiez (e.g. coffee-cafea).					
7.	Învăț o expresie ca și cum ar fi un singur cuvânt (nu învăț cuvintele din expresie separat).					
8.	Grupez cuvintele pe care le învăț în familii de cuvinte.					
9.	Asociez cuvântul nou cu un sinonim sau antonim.					
10.	Asociez cuvântul cu alte cuvinte din același câmp tematic (e.g. fructe, legume etc.)					
11.	Asociez cuvântul nou cu o imagine.					
12.	Rețin cuvântul după ce l-am căutat de câteva ori în dicționar.					
13.	Asociez cuvântul cu o experiență personală.					

14.	Asociez cuvântul cu un altul cu care rimează (e.g two is a shoe).						
15.	Asociez cuvântul cu un loc familiar.						
16.	Asociez cuvântul din engleză cu un cuvânt din limba română care sună asemănător (cuvântul *far* din engleză sună la fel ca și cuvântul *far* din română).						
17.	Fac propoziții folosind cuvintele noi.						
18.	Rețin cuvântul nou dacă mă gândesc la el foarte mult.						
19.	Dacă cuvântul are un impact asupra mea, atunci îl rețin foarte repede.						
20.	Rețin cuvântul dacă îmi aduc aminte de contextul/propoziția în care l-am întâlnit.						
21.	Scriu cuvintele noi pe un perete, poster, ușă etc ca să le văd mereu.						
22.	Îmi aranjez cuvintele noi folosind organizatori grafici (e.g. hărți mentale, diagrama arbore etc.).						
23.	Îmi sortez cuvintele noi pe categorii (e.g. man, woman=human beings, cat, dog=domestic animals)						
24.	Îmi ordonez cuvintele ca pe o scară (e.g. good-better-the best, huge, big, small) ca să le rețin**.**						
25.	Îmi includ cuvintele noi într-o poveste pe care o concep chiar eu (e.g dogs, cats like....).						
26.	Subliniez prima literă din cuvântul nou ca să mi-l amintesc mai repede.						
27.	Parafrazez sensul cuvântului (rețin mai degrabă așa cuvântul decât doar traducerea în limba română)						
28.	Îmi aranjez cuvintele într-un anumit mod în caiet (e.g. le pun într-un cerc, într-un triunghi, coloane etc. ca să iasă în evidență)						

29.	Scriu cuvântul nou împreună cu traducerea sau definiția lui într-o listă de cuvinte.					
30.	Fac cartonașe- scriu pe o parte cuvântul nou și pe spate scriu traducerea lui, o definiție sau un exemplu în care apare cuvântul.					
31.	Notez cuvântul în caietul de clasă dacă consider că voi avea nevoie de el în viitor.					
32.	Copiez cuvântul de mai multe ori până îl rețin.					
33.	Scriu cuvântul nou într-un vocabular.					
34.	Mă uit peste cuvintele de la secțiunea de vocabular din manual.					
35.	Ascult cum se pronunță cuvintele noi în timpul orei de engleză și apoi le repet și eu.					
36.	Nu încerc să rețin cuvântul în vreun fel.					
37.	Mă testez din cuvintele noi.					
38.	Îmi aduc aminte de cuvintele noi când le întâlnesc din nou în muzică sau filme.					
39.	Mă uit peste cuvintele noi într-o zi, câteva zile mai târziu, peste o lună, ori de câte ori cred că este necesar să le rețin.					
40.	Fac exerciții de vocabular.					
41.	Exersez cuvintele noi și acasă, nu doar la școală.					
42.	Folosesc cuvintele noi în conversații/ chats.					
43.	Exersez cuvintele noi în timpul orei de engleză prin activități de consolidare.					
44.	Exersez cuvintele noi cu prietenii/colegii mei/în grup la școală.					

45.Pentru mine strategiile cele mai folositoare de reținere a cuvintelor noi sunt:
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	Cum înveți cuvinte noi în engleză folosindu-te de resursele tehnologice?	NICIODATĂ	RAR	CÂTEODATĂ	DES	FOARTE DES
1.	Caut cuvintele noi într-un dicționar online pe telefonul mobil.					
2.	Caut cuvintele noi într-un dicționar online pe calculator/iPad/tabletă					
3.	Folosesc o aplicație pentru traducere (e.g. Google translate).					
4.	Accesez linkul de pe un cuvânt dintr-un text online care mă trimite la un dicționar unde văd imediat înțelesul cuvântului.					
5.	Caut pe internet o imagine care să reprezinte cuvântul nou.					
6.	Învăț cuvinte noi când navighez pe internet.					
7.	Învăț și descopăr înțelesul unor cuvinte din jocurile online.					
8.	Învăț cuvinte noi din diverse apps pe care le folosesc.					
9.	Descarc apps pentru învățarea sau consolidarea vocabularului pe smartphone/tabletă/iPad.					
10.	Utilizez corpus websites (un corpus= colecție de texte dintr-o limbă, adunate pe un site, texte care îți dau toate contextele în care apare un cuvânt, frecvența acestuia și expresiile/collocations care îl includ, e.g. http://corpus.byu.edu/bnc/					
11.	Folosesc dicționarul de sinonime și antonime (Thesaurus) în Microsoft Word atunci când am nevoie.					
12.	Salvez cuvintele noi într-o listă pe telefon.					
13.	Îmi pun cuvintele noi pe ecranul de la computer/tabletă ca să mi le amintesc.					
14.	Caut pronunția unui cuvânt într-un dicționar online și ascult cum se pronunță.					

15.	Mă înregistrez pe telefon/tabletă pronunțând cuvântul nou.						
16.	Îmi aduc aminte de cuvintele întâlnite online dacă accesez din nou aceleași pagini.						
17.	Folosesc spell check în Microsoft Word.						
18.	Fac exerciții de vocabular online.						
19.	Folosesc programe speciale pe computer pentru învățarea vocabularului (e.g. My vocabulary.com, vocabularynotebook.com, rosettastone.eu etc.)						
20.	Mă testez din cuvinte noi făcând quiz-uri de vocabular online.						
21.	Mă uit și ascult tutoriale, prezentări, podcasts pe subiecte care mă interesează atunci când sunt online.						
22.	Învăț cuvinte noi folosind rețelele de socializare (Facebook, Twitter etc.).						
23.	Conversez în engleză (chiar și cu vorbitori români) dacă am ocazia atunci când sunt online.						
24.	Învăț cuvinte noi în cadrul activităților de învățare pe calculator (e.g. în cadrul orei de engleză folosim calculatorul în sarcinile de lucru și consolidez sau învăț cuvinte noi).						
25.	Folosesc cuvintele noi atunci când fac activități pe smartphone/tabletă (e.g. poze, filmulețe, conversații în grup pe whatsapp) pe care apoi le prezint colegilor în limba engleză.						
26.	Pun întrebări pe diferite forumu-uri/ site-uri (e.g. https://answers.yahoo.com/) legate de situațiile în care se poate folosi un cuvânt/o expresie.						
27.	Întreb un coleg/prieten care este online despre înțelesul unui cuvânt nou.						

28.	Mă joc diferite jocuri de vocabular pe smartphone/tabletă/telefon/iPad/ computer (e.g. hangman, scrabble, memory, crosswords, word associations etc.).						

29. Aplicațiile mele preferate/programele pe computer preferate de învățare/consolidare/ jocurile mele preferate din care învăț cuvinte în limba engleză sunt:

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COMENTARII (Dacă vrei să mai adaugi ceva legat de învățarea vocabularului cu resurse tehnologice, completeaza această secțiune)

Care este atitudinea ta legată de învățarea vocabularului cu resurse tehnologice?		DEZACORD TOTAL	DEZACORD	NICI ACORD NICI DEZACORD	ACORD	ACORD TOTAL
1.	Prefer exercițiile de vocabular online decât cele din manuale sau alte culegeri.					
2.	Mi-ar plăcea să mi se explice cum să folosesc anumite aplicații și alte resurse tehnologice pentru învățarea vocabularului.					
3.	Mi-ar plăcea să-mi folosesc propriile dispozitive (telefon, tabletă, iPad, laptop) pentru activitățile de învățare din clasă.					
4.	Apps și programele pe computer de învățare a vocabularului sunt utile învățării.					
5.	Apps și programele pe calculator de învățare a vocabularului sunt o sursă de divertisment, nu de învățare.					
6.	Cred că multe apps și programe de învățare a vocabularului online sunt ușoare și plictisitoare.					

7.	Aș folosi apps în timpul liber să învăț cuvinte noi.					
8.	Aș folosi apps/programe de învățare a vocabularului/alte website-uri cu activități de învățare a limbii engleze dacă ar trebui să mă pregătesc pentru un test de limbă (FCE, CAE, CPE, IELTS etc).					
9.	Când încerc să învăț cuvinte noi prin apps/programe/websites pentru exerciții de vocabular sunt distras/ă de alte activități din mediul online.					
10.	Mi-ar plăcea să știu mai multe despre posibilitățile de învățare a vocabularului pe care mi le oferă tehnologia.					
11.	Învățarea vocabularului cu resursele tehnologice depinde de tipul de persoană și de stilul de învățare.					
12.	M-aș simți motivat/ă să îmi îmbunătățesc vocabularul în limba engleză utilizând apps/programe de învățare pe calculator.					
13.	Mă ajută foarte mult paginile online pe care le accesez în învățarea de cuvinte noi.					
14.	Ar fi util să-mi fac un vocabular pe laptop/tabletă/telefon unde să notez cuvintele noi pe care le întâlnesc.					

COMENTARII (Dacă vrei să mai adaugi ceva legat de ceea ce simți în legătură cu învățarea vocabularului folosind resurse tehnologice completează aici)

The study presented in this book investigated the vocabulary learning behavior of 1,239 high school students learning English as a foreign language in 9 Romanian schools. The research identified the vocabulary learning strategies used by students and focused on how the choice of vocabulary learning strategies varied across four independent variables: students' age, gender, academic profile and language program. Furthermore, the study examined the technology enhanced tools (computer and mobile assisted language learning tools) used by these students in their vocabulary learning as well as their attitudes towards using technology in vocabulary learning. The results made some important contributions to the field of vocabulary learning in a digital context enriching existing knowledge of the topic in a Romanian cultural context.

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